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What Shapes Our Attitudes Toward Outgroups?: Measuring Implicit and Explicit Homosexual Prejudice

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WHAT SHAPES OUR ATTITUDES TOWARD OUTGROUPS?: MEASURING IMPLICIT AND EXPLICIT HOMOSEXUAL PREJUDICE

by

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Abstract

The emotional bases of homosexual prejudice are not completely understood, often times not even by the people who hold the prejudice themselves. Because implicit biases can go undetected even by the person holding them, and because they happen before conscious control of emotions is available, these attitudes may be best measured through physiological measures like startle eye-blink response. My honors thesis measures implicit attitudes toward homosexuals using psychophysiological means and examines the influence of religious fundamentalism and right-wing authoritarianism on those non-conscious automatic attitudes. Facial Electromyography (EMG) was used to detect startle responses to an auditory probe while viewing romantic, but not sexual, images of homosexual and heterosexual couples. In Study 1, participants high in religious fundamentalism and right wing authoritarianism were more likely to rate photos of gay couples lower in attractiveness than straight couples. In Study 2, this same result was found in relation to explicit antigay bias, which was also negatively correlated with intrinsic motivation to appear non-prejudiced. Those who were intrinsically motivated, versus extrinsically motivated, exhibited less explicit prejudice. Also, those who were high in supernatural belief on the Post Critical Belief Scale were more likely to show explicit prejudice, regardless of whether they held their beliefs literally or symbolically. The startle response did not have any significant correlation to any self-report measures. This is likely due to either an orienting effect to the gay photos or it may indicate that homosexual prejudice is found more in conscious thought than in implicit attitudes.

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Introduction

Being gay in the United States in the early 20th century looked drastically different from our current societal perception of homosexuality. Gay men and women were isolated and often left with the choice of denying their homosexuality, or risking their lives, as they knew them. Being discovered as a homosexual could lead to being committed to an insane asylum, imprisonment, and sometimes suicide (Scagliotti, Rosenberg, & Schiller, 1985). As large cities developed in the 1920s, more free social norms paved the way for a homosexual underground. A bohemian subculture began to establish itself in such places as New York's Harlem, San Francisco, and the French Quarter in New Orleans (Scagliotti et al., 1985). Within this subculture, gays and lesbians found each other and found acceptance for the first time. However, this was largely limited to the speakeasies and underground societies within the cities. Homosexuality in America still remained hidden outside of these few communities (Scagliotti et al., 1985).

As the country moved into the Great Depression and the World War II era, social discontent and discrimination ran high. Yet, a certain level of tolerance was necessary in terms of the war effort. Many gays and lesbians served in WWII and often found each other in doing so. This carried over after the war as many gays and lesbians settled in the port cities they came back to in order to avoid the judgments of family, friends and rural communities they belonged to previously (Scagliotti et al., 1985).

Soon, the country found itself in the Cold War, during which everyone was looking for enemies and homosexuals, along with anyone perceived to be a social deviant, became popular targets. It was alleged that the Soviets were using gays as spies and thus hundreds of gay men and women lost their government jobs in the department of

state (Scagliotti et al., 1985). Alongside this renewed wave of discrimination came a renewed wave of progress. In 1950, the first gay organization, the Mattachine Society, was formed, and with this came the first gay magazines: “Mattachine Review”, and “One” (Scagliotti et al., 1985). As these organizations and publications gained popularity, the gay community broke into mainstream publicity during the 1960s. Topics like homosexuality as a mental illness became hotly debated which resulted in attention—both positive and negative—being given to the gay community (Scagliotti et al., 1985).

One result of this attention was police raids on the popular gay bars in the cities. Police brutality was a constant threat, and much of this violence culminated in what is known as the catalyst for the gay rights movement in the US: the Stonewall Riots in 1969. The Stonewall Inn housed one of the bars where gays were accepted in a public environment, which made it a target for police raids. On the night of the Stonewall Riots, a routine raid was met with the opposition of a few, which soon turned into a violent, three-day riot backed by hundreds from New York’s gay community (Scagliotti et al., 1985). This event led to widespread, national publicity that the isolated communities of these larger cities had yet to receive for their struggles. It also sparked the establishment of the various advocacy groups and publications, and the slow, steady struggle that has endured to this day.

In recent years, gay men and lesbians have risen to the front of our national discourse on civil rights. In 2012, Maine added to this conversation with a strong statement: the legalization of gay marriage. In 2013, the Supreme Court approved the recognition of these unions on a federal level. As increasing numbers of states pass legislation that furthers the equality of rights between gay and straight couples, it is easy

to assume that anti-gay prejudice is slowly but surely being erased from our culture. While this political progress is certainly promising, it cannot be construed as evidence of an end to anti-gay bias on a societal level.

Policy change, while impressive for headlines and political platforms, has historically marked the beginning of struggle against intergroup bias, not the end. For example, in 1954, when the U.S. Supreme Court ruled against school segregation in Brown vs. Board of Education, we were still two years away from their ruling against public bus segregation, and ten years away from President Johnson's signing of the Civil Rights Act. Even today, 60 years and one black American President later, racial equality has yet to be fully achieved in the United States. Although these momentous events all serve as benchmarks in the ongoing fight for social and economic equality in our multiracial society, no one legislation can change the minds of millions of Americans. Unfortunately, prejudice does not end with a Supreme Court ruling—it reaches into the workplace, the classroom, the courts, both legal and athletic, and essentially into every aspect of society.

Prejudice

Prejudice is defined as "a hostile or negative attitude toward a distinguishable group" based on a generalization of that group (Aronson, 2007). Prejudice is often manifested in acts of discrimination, which are active, negative behaviors toward an outgroup and can have far reaching consequences for members of that outgroup. An abundance of research suggests that stigma can have pervasive, negative effects on mental health and self esteem (Clyman & Pachankis, 2014), physical health (Frost, Lehavot & Meyer, 2013), as well as economic success (Corrigan, Powell & Rusch,

2012). Despite the clear consequences, the causes of prejudice are often difficult to determine.

Anti-gay Bias

Homosexuality has a long history, which, although largely dominated by discrimination, began with acceptance. In ancient Greece, homosexuality was completely accepted and there was no special name for it (Reiss, 1990). It is generally thought that the stigma surrounding homosexuality began with St. Augustine and his repression of all sexuality. Since then, gay men and lesbians have endured much hatred and discrimination. Under the Spanish Inquisition, there were over 100 men executed on the basis of their sexual orientation. During Stalin's reign in the USSR, homosexuality was punishable by up to five years in prison with hard labor. Around the same time, homosexuals were targeted, amongst many other groups, by Nazis, with an estimated 5,000-15,000 being placed in Nazi concentration camps (Holocaust Encyclopedia, 2013). More recently, and closer to home, homosexuals have faced a slew of hate crimes as well as discrimination from the psychological community. When research on sexual orientation first began, the American Psychological Association listed homosexuality as a disorder and it was widely believed that this "disease" could be treated or reversed through various therapy techniques (Beaman, Cannizzaro & Goldman, 2007).

The concept of homophobia was first introduced by Weinberg in his book *Society and the Healthy Homosexual* published in 1972. Weinberg, as a psycotherapist, made the bold statement that he "would never consider a patient healthy unless he had overcome his prejudice against homosexuality" (Weinberg, 1972). Weinberg's book focused on the negative impact of homophobia on both people who are homophobic as well as on gay

people. Weinberg's book, along with Alfred Kinsey's extensive research on sexuality, helped bring the stigma surrounding homosexuality to the forefront of the psychological community, which eventually led to the APA removing homosexuality from the *Diagnostic and Statistical Manual* (DSM) in 1973. The APA's statement from December of 1973 regarding the mental health of and discrimination against homosexuals read as follows:

> Homosexuality per se implies no impairment in judgment, stability, reliability, or general social and vocational capabilities; Further, the American Psychological Association urges all mental health professionals to take the lead in removing the stigma of mental illness that has long been associated with homosexual orientations. (Conger, 1975)

This statement by the APA preceded a great increase in the empirical study of homosexual prejudice and general attitudes towards gay men and lesbians.

One of the first psychological researchers to focus on antigay attitudes was Gregory Herek (1988), who developed the Attitudes Towards Lesbians and Gay Men scale (ATLG). Herek created the ATLG with the goal of creating a valid and reliable scale that could be widely used in research regarding homosexuality and was one of the first researchers to start looking at principal correlates of attitudes towards gay men and lesbians. These correlates included attitudes about gender and family roles, religiosity, conservative political ideology, and the extent of interpersonal contact with homosexuals (Herek, 1988). Despite how early Herek was with this work, his ATLG is still used today in research regarding these same correlates of antigay bias, among many others.

On a societal level, antigay attitudes are heavily influenced by perceived threat, as are all intergroup attitudes (Riek, Mania, & Gaertner, 2006). Intergroup threat theory states that the combination of realistic threat (i.e. real risk for the ingroup) and symbolic threat (i.e. threat to the worldview of the ingroup through perceived differences with the outgroup) makes up intergroup attitudes (Stephan et al., 2002). Homosexuals do not seem to present a realistic threat to safety or material security, but instead they present a symbolic threat due to the perceived violation of gender, family, and social norms resulting in a conflicting worldview (Cottrell & Neuberg, 2005). Family norms and values, in particular, have been shown to prompt less support for gay rights (Vescio & Biernat, 2003), and have been especially relevant in the recent discourse surrounding gay marriage.

These different types of threat, realistic and symbolic, can predict different behaviors and attitudes toward outgroups. For example, one might react differently to the "realistic" economic threat of welfare recipients (that is, a threat to material security) than to the symbolic value-violating threat of gay men and lesbians. In addition, the current events and culture of a society can have an effect on perceived outgroup threats. In a study by Brambilla and Butz (2013), activating thoughts of symbolic threats on a societal level was shown to increase prejudice against gay men. Participants in this study were primed with either a macro-level symbolic threat, a nonsymbolic threat, or a neutral topic and then asked to report their support for social policies regarding gay men and welfare recipients. Their responses showed that the macro-level symbolic threat lessened support for gay men but had no effect on their views of welfare recipients. These findings

demonstrate the significant ways in which differences in perceived threat of an outgroup can translate into individual support or derogation for that group.

On an individual level, attitudes toward homosexuality vary largely by gender, potentially due to the gender threat aspect of homosexual prejudice (Bosson et al., 2012; Jewell & Morrison, 2012; Moradi et al., 2009). Culturally, manhood has been historically more difficult to earn and more constantly challenged than womanhood (Gilmore, 1990). It is thus defended more often and manifests itself in more violent ways than womanhood (Bosson et al., 2011; Vandello & Bosson, 2013). Manhood is especially challenged by those who are viewed as disturbing conventions of masculinity, such as homosexuals. Adherence to male status norms, specifically, the anti-femininity norm, has been shown to indirectly affect (through sexual prejudice) anger and aggression in response to gay men (Parrott, 2009). Young, heterosexual males are typically the group that experiences the most pressure to adhere to these norms. For this reason, young heterosexual men have been shown to have the least favorable attitudes toward, and commit the most aggressive acts upon gay men (Herek, Gillis, Cogan, & Glunt, 1997; Mahaffey et al., 2005).

Asserting one's heterosexuality has had interesting implications for attitudes toward homosexuality. Prewitt-Freilino and Bosson (2008) found that explicitly stating that one is heterosexual reduced men's discomfort during gender threatening activities. The implications of this finding are that anti-gay bias is largely founded in a fear of others' perception of one's own sexuality. This makes sense from an evolutionary standpoint since being perceived as gay could theoretically impact one's ability to successfully mate.

On the other hand, Rivera (2009) found that positive feedback about ones masculinity leads to straight men evaluating gay men more negatively, implying that highlighting gender norms heightens the perceived seriousness of their subsequent violation. The effects of gender threats on gay prejudice have also been studied using gender identity tests. Feedback from those tests (either positively reassuring high scores in masculinity or not) have shown largely that gender threats are associated with reduced support for gay rights and higher levels of aggression toward gay men, a clear indicator that symbolic threats drive both antigay attitudes and behaviors (Willer, 2005; Talley & Bettencourt, 2008).

These general negative attitudes, while driven by symbolic threats, can have very realistic interpersonal consequences. Throughout the study of sexual prejudice, it has been positively associated with anger and aggression toward gay men (Parrott & Zeichner, 2005; Vincent, Parrott, & Peterson, 2011). Despite the attention that has been paid to these more obvious manifestations of anti-gay attitudes, subtle prejudice has a similar ability to negatively impact the gay community. Along with the earlier mentioned consequences to health and other outcomes, sexual prejudice has more subtle interpersonal consequences.

A study by Goodman (2008) on homosexuality and leadership demonstrates the powerful effect that subtle disrespect can have. Participants were asked to rate a gay man on his leadership abilities after a small group interaction in which an experimenter within the group made either a derogatory or a neutral remark. Gay leaders were rated lower in leadership abilities and participants showed more negative nonverbal behavior in the presence of a derogatory remark as compared to when no derogatory remark was made

(Goodman, 2008). The ability to be respected as a leader or even just as a group member is absolutely essential to success in countless aspects of life both economically and socially. The effect that undermining this fundamental life skill can have on an individual is an important example of how prejudiced attitudes can be detrimental to the success of sexual minorities even in non-violent ways.

Implicit Prejudice

Prejudiced attitudes are often not known even to the person who holds them. People have what is called a dual attitude system, consisting of both conscious and automatic attitudes (Myers, 2010). This is perhaps best explained through the MODE model (Motivation and Opportunity as Determinants of the attitude-behavior relationship), developed by Fazio and Olson (Petty, Fazio, & Briñol, 2009). This model is based on the definition of an attitude as "an association in memory between an object and one's evaluation of it" (Petty, Fazio, & Briñol, 2009). Attitudes, Fazio explains, can be evaluated on a spectrum from neutrality (thus eliciting no response), to automatic, which elicit a strong, inescapable response.

The MODE model further breaks down this spectrum and introduces two main factors that determine how an attitude turns into a behavior: motivation and opportunity. The strongest motivation is usually accuracy and common opportunity factors include time and energy. It takes resources to overcome an automatic reaction, thus when people are tired or distracted, they are more likely to rely on their initial response than to logically decipher the most accurate conclusion and appropriate behavior (Petty et al., 2009). According to the MODE model, situations that provide high motivation and high opportunity are the only ones in which more effort will be exerted and behavior will not

be determined by an attitude-congruent, automatic response (Petty et al., 2009). Implicit (automatic, attitude-congruent responses) and explicit (controlled, observable responses) attitudes can be in conflict within any individual towards any given group.

In terms of gay prejudice, this means that someone may explicitly support gay marriage, but implicitly think less of gay individuals. Despite their support of gay marriage, this person could still engage in employment discrimination or other acts that put gay people at a disadvantage in society, even unintentionally. Within the dual attitude system, people can have different explicit and implicit attitudes toward the same group of people (Myers, 2010). In a large-scale study conducted by Nosek and colleagues from 2000-2006 using the Harvard Implicit Association Task, 68% percent of participants showed implicit preferences for straight people over gay people, indicating that, on average, Americans have negative automatic responses to homosexuals (Nosek et al., 2007).

Implicit prejudices can and do have a real effect on peoples' behaviors. Many studies have shown that "subtle" prejudice is alive and well in modern society through such modes as employment and legal discrimination (Bertrand & Mulainathan, 2004; Harton & Dirth, 2010). In one study on employment discrimination, Michelle Hebl and colleagues (2011) saw that despite the outward appearance of equal treatment (i.e. allowed to use private bathrooms, asked to fill out application, and called back after interview) the verbal and physical cues from employers were different depending on whether they were interviewing a straight or a gay candidate. For example, interviewers tended to use fewer words, engage in less eye contact, and be less verbally positive to gay

interviewees. All of these subtle actions can have a negative impact on an interviewee's success and thus lower their chances at obtaining a job (Hebl et al., 2011).

Intergroup Contact

Given the serious consequences that anti-gay bias can have on this outgroup, it is necessary to study what factors perpetuate this prejudice and what can be done to reduce it. One theory that has been explored to reduce prejudice is contact theory. First introduced by Gordon Allport in 1954, the basic concept is that attitudes toward an outgroup can be improved by increasing the amount of contact one has with people of that group. The type of contact, however, is critical. Contact in equal-status settings that are more likely to produce a more intimate acquaintance are likely to increase positive attitudes toward outgroups (Allport, 1958). On the other hand, casual contact such as seeing strangers on the street or interacting in small business transactions, which may perpetuate stereotypes, can be harmful. This is because, Allport says, there is no effective communication, so attitudes either remain the same or become more negative through the reinforcement of stereotypes.

Contact also has implications for the ways in which the minority group perceives their relationship with other groups. When experiencing negative events, minority groups will sometimes attribute their misfortunes to discrimination. This creates both interpersonal challenges (i.e. more negative feedback from their outgroup) but can also be beneficial for self-esteem (Kaiser & Miller, 2001; Major, Kaiser & McCoy 2003). Commonality-focused contact with outgroups has been shown to decrease the likelihood that negative outcomes are attributed to discrimination (Saguy & Chernyak-Hai, 2012). As mentioned earlier, intergroup contact was one of the variables that Herek (1988)

found to be correlated with attitudes towards homosexuals in his early work using the ATLG and has continued to show a significant correlation in more current research (Baunach, Burgess & Muse, 2009). High quality, positive interactions can have an impact on how not only the majority group perceives the minority, but also how the minority understands their relationship to the majority group.

Religion

The paradoxical relationship between religion and prejudice is both frustrating and complex. Religions preach understanding and tolerance, yet simultaneously, they can promote ingroup bias and outgroup derogation (Allport & Ross, 1967). Historically, the record of violence associated with religious motives has been apparent since such events as the Crusades and early Islamic conquests (Norenzayan, 2013). Yet, religion was a cornerstone of progressive events such as the Civil Rights Movement of the 1960s, demonstrating that the historical effects of religiosity on prejudice have been both positive and negative.

Formally, the paradox was first observed in social psychology in the 1960s when it was demonstrated that whites' religiousness was positively correlated with unfavorable attitudes toward blacks (Herek, 1988). Though at first perplexing, Allport suggested an explanation that broke religiosity down into two categories and made a first attempt at targeting the mechanisms behind this paradox. Extrinsic religion, Allport explained, is a type of religiousness that is pursued for the purpose of social interaction and conforming to norms. This can be measured by attending services and general involvement in the church community. Intrinsic religiosity, he argued, is more about religion as its own end. That is to say, intrinsically motivated religious people orient their religiosity toward

establishing their own moral framework and finding their own meaning in life. In other words, this is the difference between "using" ones' religion and "living" it (Allport & Ross, 1967). Consequentially, Allport and Ross theorized that the extrinsically motivated person would be more likely to be prejudiced, while the intrinsically motivated would be less likely to be prejudiced.

Since Allport's original explanation, many different perspectives have been taken on the relationship between religion and prejudice. A modern conceptualization of Allport's theory was developed by Ara Norenzayan in his book *Big Gods* (2013). Norenzayan's ideas are rooted in the supernatural water hypothesis that explains religion as an evolutionarily adaptive construct. Religion, it argues, allowed people to trust each other based on a common understanding that they were all being watched (and subsequently punished, if necessary) by a supernatural being (Norenzayan, Shariff, & Gervais, 2009). As society grew, so did the need for trust in neighbors and strangers; thus religiosity became evolutionarily adaptive and allowed for progress and growth across the human race—or at least across ingroups. This theory has been largely accepted by social psychologists and as such is key to how many researchers currently approach Allport's paradox regarding religion and prejudice.

Norenzayan (2013) outlines the three main ways in which religious tendencies perpetuate negative attitudes toward outgroups, in light of this evolutionary approach to religion. First, the trust built by a common supernatural watcher does not extend to those who believe in a different God and certainly does not apply to those who do not believe in any God. This creates a clear motive to avoid people of other religious groups and atheists. The second factor is that the social bonding that occurs through participation in

religious rituals and traditions inherently strengthens the differences between ingroups and outgroups. Again, this creates boundaries between different religions and can sometimes lead to intergroup conflict. Lastly, the values that are developed through religious participation are sacred and thus not easily swayed. These steadfast beliefs make compromise with those who hold different values quite difficult (Norenzayan, 2013).

As Norenzayan notes, the way in which religious values are held is essential to how they are manifested in behavior. In fact, how religious beliefs are held has become more important in the study of prejudice than the motivations behind religion, since Allport's time. Two major aspects of religiousness that have been studied in relation to prejudice are right-wing authoritarianism (RWA) and religious fundamentalism (RF). Early studies investigating rigidity of religious beliefs (RF and RWA), argued that RWA was primarily responsible for the link between religion and prejudiced attitudes (Mavor et al., 2009; Laythe et al., 2001).

There are three different aspects of right wing authoritarianism (RWA): aggression, submission and conventionalism (Mavor, et al., 2009; Duckitt et al., 2010). Aggression is represented in the RWA scale by such statements, as "what our country really needs is a strong determined leader who will crush evil, and take us back to our true path." Submission refers to the willingness to follow such a leader: "What our country needs most is discipline, with everyone following our leader in unity." The last measure is geared toward the conventions that RWA endorses. It is represented on the RWA scale by statements like "Everyone should have their own lifestyle, religious

beliefs, and sexual preferences, even if it makes them different from everyone else," which is a reverse scaled item.

As both the RF and RWA scales have been used more widely, it has come to light that the conventionalism subscale of RWA has a significant overlap with the RF scale (Mavor, et al., 2009). In current research that removes this statistical artifact, religious fundamentalism appears to have a more significant effect on prejudiced attitudes and it appears that the past interpretation of RWA predicting these attitudes was merely a result of the statistical overlap between the two constructs (Mavor, et al., 2009). Religious fundamentalism was defined by Altemeyer (1996) as "the belief that there is one set of religious teachings that clearly contains the fundamental, basic, intrinsic, essential, inerrant truth about humanity and deity," so it is not surprising that it is highly correlated with RWA. While both constructs investigate the nature of one's religious belief, RF focuses more on the absolute rigidity of the belief system, which has been shown to have a significant impact on views of outgroups (Leak & Finken, 2011; Jonathan, 2008; Johnson et al., 2011).

In an attempt to clarify the theoretical approach of religious constructs' effect on prejudice with less confounded measures, another measure sometimes used is the Post-Critical Belief Scale (PCBS). Based on the theoretical framework of Wulff (1991), the PCBS was developed by Duriez, Fontaine and Hutsebaut (2000). This scale separates two main components of religion: belief in God or a higher power, and cognitive rigidity/flexibility of beliefs (Johnson et al., 2012). RF and RWA scales include both of these constructs, but they do not examine their specific effects. The PCBS looks at both of these aspects of religious belief along two different axes: 1) exclusion versus inclusion,

which measures belief in God or a higher power, and 2) literal versus symbolic, which measures the rigidity/flexibility component of religious beliefs (Duriez et al., 2000). Interpretations of the PCBS show how these axes interact through four distinct approaches to religion: 1) orthodoxy—literal and transcendent; 2) external critique—literal and non-transcendent; 3) second naiveté—symbolic, transcendent; and 4) relativism—symbolic and non-transcendent (Duriez et al., 2000).

In terms of prejudice, past studies using the PCBS have shown that the literal vs. symbolic scale is a strong predictor of racial prejudice (Duriez & Hutsebaut, 2000). It has also been shown, more generally, that those who hold their beliefs literally are more likely to have culturally conservative and prejudiced attitudes, compared to those that hold their beliefs symbolically (Duriez et al., 2007). A recent study by Megan Johnson Shen and colleagues (2012), which looked at both racial prejudice and gay prejudice, showed that both axes have their own role in predicting prejudiced beliefs. Interestingly, the belief in God component had the strongest effect on attitudes toward value-violating outgroups, including gay men and atheists (Johnson et al., 2012).

All of these religious constructs (PCBS, RF, and RWA) have had varying implications for how people view homosexuals. In a study by Baunach, Burgess, and Muse (2009), which looked broadly at religiousness, significant correlations were found between religiousness and gay intergroup contact. So, those who attended the most church services were likely to report the least contact with gay men and lesbians. Though the name of this study was "Southern (Dis)Comfort," the relationship between religiousness and homosexual prejudice has not been limited to this study or to the South. Bernard Whitley (2009) conducted a meta-analysis using 64 studies, conducted in

the US and Canada, on attitudes toward gay men and lesbians. Whitley demonstrated through this large collection of studies that the vast majority of religious constructs, including RF, orthodoxy, and religious service attendance, are all correlated with negative attitudes towards homosexuals.

In this same analysis, Whitley also demonstrated that across many studies, that a different orientation to religion, called quest-orientation, was correlated with more positive attitudes toward gay men and lesbians. Quest orientation refers to a view of religion that is open-minded and aims to find truth and meaning (Batson et al., 1986). Relationships like this show that it is necessary to untangled the different religious constructs in order to understand how religion and prejudice are fundamentally related. Eunike Jonathan (2008) found an even more surprising predictive relationship between Christian orthodoxy and positive explicit attitudes toward gays. Although this study is certainly outnumbered by the 64 in Whitley's analysis, it is important to note that Allport's paradox can be extended to homosexual prejudice. While some religious constructs appear to perpetuate antigay attitudes, others (or those same ones in different contexts) might inhibit these attitudes or even promote positive attitudes toward homosexuals; this complex pattern of relationships warrants further research.

Another important question to ask, given these discrepancies in findings, is if people are reporting their true feelings toward homosexuals. There are two major reasons why self-report is not entirely dependable: different motivations to respond without prejudice, and implicit versus explicit attitudes. First, internal versus external motivations to avoid prejudice can shed light on what drives people's attitudes. The Internal and External Motivation to Respond without Prejudice scales (IMS/EMS), developed by

Plant and Devine (1998), illuminate the differences between societal factors and personal values in determining one's prejudiced attitudes. Those societal pressures, (i.e.—peer and family attitudes, religious group attitudes) can impact the honesty with which participants are willing to report an increasingly socially proscribed attitude.

The other half of this question is do explicit attitudes tell the whole story of the relationship between religion and gay prejudice? The dual-attitude system provides ample room for error in the effort to assess the correlates of gay prejudice, especially when explicit attitudes are so much easier to measure than implicit. As was mentioned in the discussion of implicit attitudes, these types of biases are more difficult to access and change, and are most commonly at play when people are tired, stressed, and distracted. At times when these mental resources are limited, prejudice, and consequences of that prejudice, are likely to be the strongest. Thus, it becomes important to pay due attention to both types of attitudes: those below conscious awareness and difficult to access, as well as those of which we are fully aware and that are readily available for self-report.

Implicit Measurements

Since implicit attitudes are below the conscious awareness of those who hold them, they can be difficult to measure, understand and, most importantly, to control. A common method used to measure implicit cognition is the Implicit Association Test (Greenwald, McGhee, & Schwartz, 1998). The IAT uses reaction time to measure implicit attitudes toward different concepts, for example, by asking that these concepts be paired with the attributes "pleasant" and "unpleasant." Greenwald, McGhee, and Schwartz tested this using universal terms like "flower" and "insect," and found that "flower" would be more rapidly associated with "pleasant" than would "insect." Since

then, the IAT has been used in many social psychological studies to detect implicit attitudes towards many different outgroups, including racial minorities, Arab/Muslims, people with disabilities and homosexuals (Jonathan, 2008; Vanman et al., 2004; Peach et al., 2010; Nosek et al., 2007). The IAT has also been used to look at social issues such as gender stereotypes and various political attitudes (Nosek et al., 2007).

In a study by Dasgupta and Rivera (2006), the IAT was used as an implicit measure of antigay attitudes by showing pictures of gay and straight couples, not just words. The researchers hypothesized that one of two conscious processes: gender-related egalitarian beliefs or behavioral control (i.e. the ability to control behavior to conform to social norms), would eliminate behavioral bias toward a member of the outgroup. Using a mock interview with either a "gay" or "straight" confederate, they were able to measure behavioral bias and demonstrated that to some degree, implicit attitudes can be controlled by conscious processes, mitigating the effect of automatic reactions on discriminatory behaviors (Dasgupta & Rivera, 2006).

The IAT has provided a valuable base for research on non-conscious, automatic cognitions, but it has also been met with a variety of legitimate critiques (e.g. Blanton et al., 2009). In addition to Blanton's concerns about predictive validity, there are also clear methodological limitations to the IAT. For example, most IATs only access a simple "good or bad" reaction to certain outgroups. Non-conscious, emotional responses to outgroups are far more complicated and nuanced than a simple reaction-time test can fully capture. Thus, it is unclear whether the IAT evaluates actual emotions, or whether it should be considered a more simple assessment of implicit cognitions, versus implicit

attitudes. For this reason, more direct physiological measurements of automatic responses may provide more high-quality data on non-conscious attitudes.

Startle Eye-blink Response. One of these other measures is the startle eye-blink (EB) response. Startle eye-blink response is part of a whole-body startle response to an unexpected stimulus, i.e., when something jumps out at you in a scary movie. In addition to the eye-blink response, tightening of the neck muscles, forward head movement, and many other muscle movements throughout the shoulders, abdomen and legs are all included in the whole-body response system to unexpected stimuli (Andreassi, 2007). With a latency of 40 ms, the eye-blink is the most immediate, stable, and easily measured portion of the whole-body response (Woodworth & Schlosberg, 1954).

The eye-blink response has been shown to react differently to varying kinds of stimuli due to a layering of emotional responses that occurs when someone is experiencing a stimulus. Vrana, Spence, and Lang (1988) found that eye blink responses were strongest when a startle probe (i.e., an unexpected blast of white noise) was combined with an unpleasant stimulus and smallest when in combination with pleasant pictures. This result, according to the authors, is due to the valence of the emotions that the images produce. That is to say, the unpleasant pictures produce a negative, avoidant reaction, while pleasant pictures produce an approach reaction, weakening the startle response. Further studies have also found that EB startle amplitudes are higher and the time it takes to react—the startle latency—is quicker in the presence of negative stimuli (Witvliet & Vrana, 1995). Recent development of this objective measure into a tool for research on implicit attitudes has shown promising results. It appears to be especially

valuable in its ability to explore a spectrum of emotions, beyond the "good vs. bad" comparison made in the IAT.

In addition to the pleasant vs. unpleasant nature of stimuli influencing the startle eyeblink response, different emotions, such as fear and disgust, can be triggered by aversive stimuli and measured with startle eyeblink. Through EMG and fMRI measurements, startle eyeblink response has been shown to activate a number of portions of the brain, including the amygdala and insula (Neuner et. al, 2010; Lang et al., 1990). Different prejudices are linked with distinct emotional responses, which are each associated with increased activation in certain areas of the limbic system. In the case of racial prejudice, that emotion is generally understood to be fear, and activates the threat response system housed in the amygdala (Ammodio et. al, 2003). Gay prejudice, on the other hand, is usually linked to a disgust reaction due to the value-violating nature of the prejudice (Zeichner & Reidy, 2009; Gervais & Norenzayan, 2012). Disgust reactions are found in the insula, thus it is that area of the brain that is expected to trigger the startle response to aversive gay stimuli (Mahaffey et. al, 2005).

Since this measurement is still relatively new, its use within the field of sexual prejudice has been limited. To our knowledge, Mahaffey, Bryan and Hutchinson (2005), are the only researchers to apply this implicit measure to the affective components of homosexual prejudice. In this study, a significant correlation was found between explicit antigay bias—as measured by desired social distance from homosexual men, and startle magnitude in response to explicitly sexual images of gay couples. However, this correlation was only found among the heterosexual men in the study; there was no such correlation found amongst the women in the study. This suggests that this immediate,

emotional response to homosexuals, measured by startle eyeblink response, may only be found in heterosexual men. Due to past results regarding emotional reactions from and to females, we used only heterosexual males as participants and homosexual males as stimuli in the current study.

The current study largely methodologically replicated a study on racial bias by Ammodio, Harmon-Jones, and Devine (2003), in which they showed that startle eye blink response can demonstrate a level of prejudice toward an outgroup—in this case, African Americans. In this study, participants were shown images of black and white faces while a startle probe - 100dB of white noise - was introduced seemingly at random. The authors were particularly interested in the effects of IMS and EMS on implicit affective race bias. They found that participants who had high IMS and low EMS exhibited weaker startle responses to black faces than those who were high in EMS or low in IMS. Interestingly, in self-report measures of racial prejudice, both high IMS and high EMS groups scored low on race bias (Ammodio et. al, 2003). These results demonstrate the importance of understanding the internal and external motivations behind both implicit and explicit attitudes toward outgroups.

Specific Aims and Hypotheses

In two studies, we evaluated overt explicit, subtle, and implicit attitudes towards homosexuals in relation to facets of religious belief. In study one, we did this through a photo evaluation survey in which participants rated photos of gay and straight couples on attractiveness, romanticism, and sexuality, followed by measures of religiosity, RF, and RWA. In study 2, we used startle eyeblink response to measure implicit reactions to these

same photos of gay and straight couples, after collecting self-report data on explicit anti-gay attitudes, religiosity, RF, and RWA.

1) I expect that participants high in internal motivation to respond without prejudice will exhibit less startle response in the presence of homosexual stimuli than those high in external motivation.

2) Participants who are high in right wing authoritarianism and religious fundamentalism, but not necessarily those who are high in religiosity, will have more negative explicit and implicit attitudes towards homosexual stimuli.

3) Participants who show negative implicit attitudes toward homosexuals on the Implicit Association Test will have higher startle responses in the presence of homosexual stimuli.

Study One

Methods

Participants: 206 participants[1] were recruited using Amazon's Mechanical Turk.[2]

Stimuli Pre-test: Photos for Study Two were gathered from new sources because the stimuli used by Dasgupta & Rivera (2006) were in black and white and too small to clearly display on a large computer monitor. Ethnicity was kept consistently white throughout the photos to avoid a confounding variable. The gender of the gay couples was also consistently male since past research has shown greater prejudice toward gay men than lesbian women (Herek, 1994; Bosson et al., 2012). Images of both gay and straight couples were found via a variety of sources on the Internet and can be found in Appendix A. Most were taken from Flickr.com, a photo sharing website that has an option to make photos available to the general public under a creative commons license. Some photographers also granted permission to use the photos on their facebook pages.

In order to test these images for use in Study Two, as well as investigate correlates of explicit antigay attitudes, an online image pretest was constructed using Qualtrics[3] and Amazon's Mechanical Turk. Participants ranked the images in attractiveness of the couple, attractiveness of the photo, how recognizable the biological sexes of the couples were, and to what degree the images were romantic and sexual. For a full list of the questions that accompanied each image, see Appendix A. The original intent was to match the photos to ensure that our results were due to our participants' reactions to the photos as homosexual and heterosexual couples, not due to other confounding variables such as the overall attractiveness of the photos. However, we

[1] Due to the constraints of Mechanical Turk, we did not collect demographic information.
[2] Amazon's Mechanical Turk is an online resource through which people are paid small sums of money to complete short tasks, e.g.—surveys.
[3] Qualtrics is an online survey software.

recognized that prejudice toward homosexuals, particularly since it is grounded in disgust, might influence ratings of those photos. So, we also collected data using self-report measures of variables that might predict seeing photos of gay couples as less attractive than those of straight couples.

There were 26 photos included in the image pilot, 13 each of gay and straight couples. Each participant saw and ranked 12 images, chosen at random from the 26. In addition to this task, each participant responded to questions regarding religiosity, religious fundamentalism and right wing authoritarianism.

Religiosity. Religiosity was measured on a 9-point scale by four questions that measured level of interest in religion, level of importance of religion to the self, and the degree to which you consider yourself a spiritual person and a religious person. For example, participants were asked to what degree they agree with the statement: "I am a religious person" with 1 being very strongly disagree and 9 being very strongly agree.

Religious Rigidity. Religious fundamentalism was measured using Altemeyer and Hunsburger's (2004) 12-question scale. This scale evaluates the rigidity of religious beliefs using questions like "God has given humanity a complete, unfailing guide to happiness and salvation, which must be totally followed" (1 = very strongly disagree, 9 = very strongly agree). Right wing authoritarianism was measured using Smith and Winter's (2002) ten item measure. This scale measures aggression, submission to authority, and conventionalism with questions like "There are many radical, immoral people in our country today, who are trying to ruin it for their godless purposes, whom the authorities should put out of action" (1 = very strongly disagree, 9 = very strongly agree).

There was also a single thermometer item (LaBouff et al., 2012), assessing feelings toward gay men, on the survey. These measures were included in anticipation of study 2, for the purpose of comparing the same correlates while using different measures of antigay attitudes.

Results and Discussion

Consistent with typical Mechanical Turk samples which are known for over representing women, liberals, and atheists (Berinsky, Huber & Lenz, 2012) the sample was relatively low in religiosity (M = 3.52, SD = 2.96) as well as religious fundamentalism (M = 3.31, SD = 2.16) and right wing authoritarianism (M = 3.52, SD = 1.95). As was expected, religiosity, RF and RWA were all highly correlated (rs from .49 to .82, $ps < .05$). See Appendix E, Table 1 for means, standard deviations, and correlations.

Although participants reported attitudes that were just above neutral toward gay men on a thermometer scale (M = 6.79, SD = 3.10; 0 = coldest feelings, 10 = warmest feelings), overall, pictures of gay couples were rated lower in attractiveness than their straight counterparts ($t(204) = -14.88$, $p < .001$). As expected, we observed an initial relationship between religiousness and more negative ratings of the attractiveness of photos including gay couples (std β =-.352, $p < .001$), see Appendix E, Table 1 for means and standard deviations. In a hierarchical linear regression, however, RF and RWA mediated the relationship between religiousness and more negative ratings (std β_{RF} =-.261, p = .041; std β_{RWA} =-.255, p = .003;). See Appendix E, Table 2 for hierarchical regression.

Since Study 1 was originally designed to appropriately match photos for study 2, the measure that it provided for prejudiced attitudes was somewhat indirect. Regardless, the results of study 1 demonstrate that people find gay couples less attractive than straight couples. Perceived attractiveness on the individual level has been shown to have an impact on how people are treated from the classroom (Ritts, Patterson & Tubbs, 1992), to the courtroom (Patry, 2008), to the job market (Commisso & Finkelstein, 2012). So, despite the indirect nature of this measure, it still has potential to link to real behavioral outcomes and negative impacts on gay men.

As one goal of this study was to select stimuli for study two, gay images 6 and 12 were removed due to significantly different mean ratings of couple attractiveness. Straight images 1 and 12 were removed in order to match the number of gay photos selected for the study, (see Appendix A for images). The images that were chosen can be found in Appendix B. Of the 26 images prescreened, 20 images were chosen for Study Two, ten gay and ten straight.

Study Two

In study one, we found that participants report more negative responses to images depicting gay couples. In study two, we used these images to investigate whether this bias against gay couples was detectible in automatic reflexive responses using startle eye-blink response as a measure of implicit attitudes. Explicit measures of antigay bias as well as religious constructs were also used alongside implicit measurements in an effort to investigate correlates of antigay attitudes.

Methods

Participants: Undergraduate students were recruited as participants from the University of Maine participant pool for the Department of Psychology (n=29). One participant was removed from the sample because he reported a homosexual sexual orientation. The resulting sample (N=28, M_{age} = 19.07, SD = 1.98) was all male and all heterosexual. The majority of the sample was white in ethnicity (82%; 7% Black, 4% Hispanic, 4% Native American, 4% Other).

Participant Pretest: Prior to coming into the lab for the main session of the study, participants were directed from the University of Maine participant scheduling site to a series of questionnaires on Qualtrics. These questionnaires measured religiousness, intergroup attitudes, intergroup contact and political attitudes. The same measures for religiousness, RF, and RWA were included in study one, as well as these additional constructs and measures.

Religiousness. One additional measure was used for religiousness: the shortened Post-Critical Belief Scale (PCBS; Duriez, Soenens, & Hutsebaut, 2005). This scale evaluates religiousness on two axes: inclusion vs. exclusion (i.e. belief in God or a higher

power) and literal vs. symbolic (rigidity of beliefs). Participants ranked statements like "The Bible hold a deeper truth which can only be revealed by personal reflection" on a 9-point scale (1 = very strongly disagree, 9 = very strongly agree).

Motivations to avoid prejudice. Internal and external motivation to avoid prejudice (IMS/EMS) was evaluated using Plant and Devine's (1998) ten item measure. This scale assesses the extent to which a person is internally motivate (i.e. by personal values) to avoid prejudice, compared to external motivations (i.e. social pressures). Statements like "Because of today's PC (politically correct) standards I try to appear nonprejudiced toward gay people" are rated on a 9-point scale (1 = very strongly disagree, 9 = very strongly agree).

Intergroup attitudes. First, a number of thermometer items (LaBouff et al., 2012), assessed feelings of warmth toward groups including gay men, lesbian women, atheists, Christians, and Muslims. A number of measures adapted from Herek's (1988) ATLG scale were used, measuring disgust, distrust and anger toward homosexuals on an 11-point scale. Also adapted from the ATLG was a measure of explicit antigay attitudes. This included statements like "I think male homosexuals are disgusting" and "Homosexual behavior between two men is just plain wrong," rated on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Lastly, participants indicated their preferred social distance from gay men and lesbians (e.g. whether they would be willing to be in the same country, same street, or a close friend).

Intergroup contact. Participants responded to several questions such as "Do you have any male or female friends, relatives, or close acquaintances who are gay or homosexual?" to evaluate how much and how often they are exposed to gay individuals.

This section also included a question to gauge how close they were to the gay individual they felt closest to (ranging from close acquaintance to immediate family).

Political attitudes. In order to investigate attitudes on current political issues such as gay marriage and abortion, participants completed specific items from the Baylor Religion Survey and contemporary politics (Bader, Mencken, & Froese, 2007).

Implicit association task. The pretest tasks also included the Implicit Association Task which uses reaction time during word categorization to gauge intergroup attitudes. In the Qualtrics version of the IAT, participants were given 30 seconds to categorize a list of words. The first trial categorizes words like "roses," "good," "poison," and "spider" into the categories "flowers/good," and "insects/bad," to acquaint participants with the procedure. After this neutral trial, participants have two more trials, one with "Homosexual/Bad," and "Heterosexual/Good" and one with "Homosexual/Good," and "Heterosexual/Bad." The words to be categorized include "gay," "happy," "straight," and "poison." The two critical trials are randomized so that some participants see the "Homosexual/Good" trial first, and others see the opposite. A score is computed for each participant which represents their relative speed in each condition. A higher value indicates more implicit prejudice (that is, faster categorization when the categories were "Gay/Bad" and "Straight/Good"). For a full list of these questionnaires, please see Appendix B.

Stimuli Presentation: The in-lab portion of the study consisted of a 15-minute set up period in which participants had facial EMG electrodes attached under their eye, a 5-minute baseline, and a 7-minute data collection period where the participants viewed images and experienced startle probes.

Participants were first greeted by a research assistant (RA) and then given the informed consent form, which was reviewed with them by the RA before participants signed. The RA then gave the participants a skin conditions questionnaire, to ensure that participants would not experience excessive discomfort during the attachment and detachment of the electrodes under the eye. In Dr. McCoy's psychophysiological suite, participants had the skin under their right eye and the middle of their forehead prepped for electrode attachment using Lemon Prep, an abrasive skin-prepping product, in order to remove any residue or dead skin cells to ensure a clear signal. Electrodes were then filled with Signa gel from BioPac[4] and attached to adhesive collars that were then affixed to the participant's face. Each participant had two standard EL254, 4mm BioPac electrodes attached just under their right eye, over the orbicularis oculi muscle, and one grounding electrode placed in the middle of his forehead.

Once the three electrodes were in place, BioPac ECG sensors were affixed to the right arm and the backs of each of the calves. Data from these, as well as the facial electrodes, was collected through a BioPac MP150 system set up to send data to AcqKnowledge data management software in an adjacent room. In the set up for participants 16 through 28 the research assistant also attached a BioPac Vasotrac blood pressure cuff to the participant's left wrist. This was only done for the last 12 participants due to difficulties with equipment during the first portion of data collection. The cuff continually took the blood pressure of the participant throughout the study. This data was also collected through the BioPac MP150 system. After this set up period, the research assistant left the room for a five-minute baseline in which data were collected while participants were instructed to simply sit and relax.

[4] BioPac Website: http://www.biopac.com/

After the baseline, the research assistant returned to the participant and began the manipulation following a script (for the full script, please see Appendix D). To acquaint participants with the procedure, they were shown a set of sample images, without any sound, during which the research assistant left the room again briefly. These images were presented using SuperLab[5] and were all neutral pictures from the International Affective Picture System (IAPS)[6], examples include a book, a picnic table, and buttons. Participants were then given headphones to wear for the rest of the study (Audio-Technica ATH-M30) and familiarized with the startle probe. The startle probe was a .5 second burst of white noise at 100db (calibrated using a RS-Digital Sound Level Meter). The intensity and duration of this startle probe is the standard used in the literature (Balaban & Taussig, 1994, Amodio, Harmon-Jones, & Devine, 2003).

After the example stimuli, the critical trial began, during which the participant was asked to keep his attention on the screen until further instructions were given. Each participant went through one series of trials, which consisted of a set of neutral pictures, followed by the images from study one[7]. These images were randomly ordered romantic, but not sexual, gay couple and straight couple photos with intermittent startle probes. Between each image, a fixation cross appeared on the screen as an inter-trial-intervals (ITI) to hold attention between pictures. Some startle probes were presented during ITIs to maintain randomness. In total, each participant saw 30 images and experienced 16 startle probes. After the trial was complete, the RA returned and removed the blood

[5] SuperLab is a stimuli presentation software that allows simultaneous presentation of visual and audio stimuli, while collecting physiological data through BioPac.
[6] The IAPS database is an extensive collection of images that have been tested for human reactions and categorized into neutral, disgusting, pleasant, etc. This was developed by the National Institute of Mental Health Center for Emotion and Attention at the University of Florida.
[7] One of the images was not prescreened in study one (Gay 13).

pressure cuff, electrodes, ECG sensors, and debriefed the participant. They were told that the researchers were interested in implicit attitudes toward homosexuals and the effects of different explicit views, assessed in the pretest, on those attitudes. The nature of implicit attitudes as below conscious awareness was explained to each participant so as to explain the necessity of a physiological measurement. Participants were awarded one research credit through SONA after completing the study.

Results

Participant Religiousness

The sample was moderately religious ($M_{\text{religious}} = 4.14$, $SD_{\text{religious}} = 2.92$; 1 = not at all, 9 = extremely) and split fairly evenly on belief in God (50% Yes, 32% No, 18% Uncertain). Of those who reported being religious, the sample was predominantly Catholic (36%; 7% Protestant, 25% Other). The remaining 32% of the sample reported no religious affiliation. See Appendix E, Table 3 for means, standard deviations, and reliabilities.

Attitudes Towards Gay Men

On average, participants reported having some intergroup contact ($M_{\text{number of gay friends}} = 2.83$, $SD = 2.20$), and moderate attitudes toward gay men on a thermometer scale ($M = 5.79$, $SD = 2.75$). As a whole, feelings of anger and disgust towards gays were low on single-item measures ($M_{\text{anger}} = 2.07$, $SD = 2.07$, $M_{\text{disgust}} = 2.68$, $SD = 2.74$). Participants reported similarly low distrust of gays ($M = 1.96$, $SD = 1.71$). The sample scored relatively low on our measure of explicit antigay male bias ($M = 3.34$, $SD = 1.75$). Correspondingly, the sample was moderately high on the social distance scale ($M = 4.36$, $SD = 2.00$), meaning that they were most comfortable with a moderate amount of social

distance from gay men. Finally, it appears that participants had a relatively strong internal motivation to avoid prejudice, (M_{IMS} = 6.19, SD_{IMS} = 1.73), as compared to their external motivations, (M_{EMS} = 4.89, SD_{EMS} = 4.89).

Expected associations were observed between religiousness, fundamentalism, authoritarianism, and antigay attitudes. Religious fundamentalism and explicit antigay bias (EAG) were significantly correlated (r = .73, p < .001), as were RWA and EAG (r = .53, p = .004), and IMS and EAG (r = -.53, p = .003). The transcendence axis of the Post Critical Belief Scale (PCBS), rather than the literal/symbolic axis, was associated with antigay attitudes (r = .68, p < .001). Please see Appendix E, Table 3 for means, standard deviations, and scale reliabilities.

The implicit measure of gay prejudice demonstrated the expected, albeit nonsignificant, bias in favor of pairing gay stimuli with negative words, ($M_{Gay+Good}$ = 10.14, SD = 5.76, $M_{Gay+Bad}$ = 12.96, SD = 5.95; t(23) = 1.139, p = .266). Two participants were excluded from the IAT analysis because their effect scores were well outside of three standard deviations. Although the IAT was not correlated with relative startle amplitudes, it was significantly correlated with IMS (r = -0.51, p = .011). That is, participants with a more intrinsic motivation to avoid prejudice towards gay men expressed less implicit prejudice.

As in Study One, fundamentalism mediated the relationship between general religiousness and antigay attitudes even when controlling for authoritarianism. In step one of a hierarchical linear regression, religion was a significant predictor of explicit antigay attitudes (std β =.635, p = .000). In the second step, fundamentalism mediated the relationship between religion and EAG (std β =.531, p = .047), while RWA was

insignificant (std β =.135, p = .439). Please see Appendix E, Table 4 for full regression statistics.

Startle Eyeblink Response

The startle amplitudes were not significantly correlated with any of the self-report measures and did not show significant differences between picture type (M_{gay} = -0.32, SD = 0.35, $M_{straight}$ = -0.09, SD = 0.32, $M_{neutral}$ = 0.34, SD = 0.32). T-tests showed that, although the startle amplitudes were higher overall for gay images than straight, the differences were not significant ($t(16)$ = .830, p = .418).

Discussion

Facets of Religiosity

Previous findings regarding religiousness, fundamentalism, authoritarianism and antigay attitudes were replicated within the self-report measures in both Study One and Study Two. RF and RWA were highly correlated with lower ratings of gay photos in Study One and RF was similarly correlated with explicit antigay prejudice in Study Two. The significant role of fundamentalism in predicting antigay attitudes is an important step to understanding the ideologies that contribute to prejudice. Fundamentalism is characterized by a strong belief in one true religion or "right" way. Since fundamentalists have a strong sense of what they believe is right, any behavior that violates their set of values is often vehemently opposed. For this reason, fundamentalism is often correlated with prejudice against value-violating outgroups, like homosexuals. The symbolic nature of the perceived threat posed by homosexuals perpetuates this conflict in values between fundamentalists and gays. Many studies before ours have observed this link (Stefurak, Taylor & Mehta, 2010; Jonathan, 2008), suggesting that symbolic threat is a key aspect to

this link between RF and prejudice. It is important to understand how facets of religious belief are related to prejudice, so those who develop interventions can target the beliefs that drive the attitudes.

Another facet of religion that appeared to be predicting attitudes toward homosexuals was the PCBS. Those high in supernatural belief on this scale were more likely to exhibit explicit antigay bias than those on the non-belief end of the axis. Meaning that whether or not one believed in God (or some higher power) was more important than *how* they believed in God—literally or symbolically, when predicting antigay attitudes. On the surface level, this appears to inherently contradict the idea that constructs within religion (RF and RWA) are responsible for the link between religion and prejudice, rather than simply religiosity itself, and indeed, it may. But while this result does provide an interesting counterpoint, it also highlights the need for further research on this topic.

PCBS is still a relatively new measure in the study of religiosity and prejudice, but other studies have found the opposite (literal vs. symbolic being a greater predictor of prejudice) than our study (Johnson et al., 2012). In this study, sample sizes more than tripled our own, which is important to note because the more sophisticated statistical tests that were run by Johnson and colleagues, which helped to demonstrate how the different axes of the PCBS were at work, were not possible with our sample size of 28. It is likely that both our limited number of participants and simple correlation statistics were not sufficient to fully understand the relationships between post-critical beliefs and antigay attitudes. On the other hand, perhaps there is a certain aspect of fundamentalism that is not as well represented by the PCBS. Although the questions on the RF scale and the

PCBS are quite similar, it is possible that with further research and a closer look at each of these scales, distinct differences may be found. Certain characteristics represented in the RF scale that may be responsible for the positive correlation with prejudice, may be underrepresented in the PCBS literal/transcendence axis.

Intrinsic vs. Extrinsic Motivation to Avoid Prejudice

Study Two also demonstrated the relationship between motivations to appear not prejudiced and explicit antigay attitudes. Intrinsic motivation to appear not prejudiced (i.e. personal morals and values) was correlated with lower explicit antigay bias. External motivation to respond without prejudice showed a trend toward the opposite, although this was not a significant correlation. That is to say, those who want to appear non-prejudiced because their personal morals motivate them to, are less likely to exhibit prejudiced attitudes than those who fear judgment from others or want to fit in.

This finding is interesting to consider in the context of the symbolic threat to people's worldviews that gays represent. It seems that since the threat is perceived in relation to one's worldview and personal values, these same internal structures can also help maintain positive attitudes toward this outgroup. Whereas external pressures do not as effectively inhibit prejudice, since the perceived threat is not external, or "realistic." Despite how well this fits theoretically, these correlations also have challenging implications for how such attitudes can be changed; societal pressures do not seem to be enough to truly alter attitudes toward homosexuals. This presents an issue with interventions for reducing prejudice, such as Allport's contact theory. If external pressures do not effectively combat homosexual prejudice, and change in attitudes must be driven by personal values, then contact may have a limited effect on intergroup

relations. Or, perhaps this is why positive, egalitarian intergroup contact works, by developing intrinsic motivations rather than surface-level, extrinsic motivations. Given the abundant research on contact theory, it seems that this latter suggestion might be most relevant in explaining these findings. However, the findings discussed thus far have all been in regards to explicitly reported anti-gay attitudes. It is essential to keep in mind that explicit attitudes are only half of the story when it comes to prejudice, and as such, only limited conclusions can be drawn from them.

Implicit Measurements

Finally, startle amplitude was not significantly correlated with any self-report measures and did not appear to vary significantly between gay and straight photos. In terms of the physiological measure, the gay and straight average startle responses were not correlated with any self-report measure. In addition, they were not significantly different from each other, though the average startle amplitude for gay photos was lower than that of straight photos.

There are several potential explanations for this pattern of results. Although startle magnitude is generally higher for aversive stimuli, it's worth noting two things. First, the stimuli were not particularly aversive, as we were using romantic, but not sexual images. In fact, although ratings for photos in study one were less positive for gay photos, they still were not rated as overtly aversive. As such, they likely did not sufficiently highlight the symbolic threat of the group (value and norm violation). One option to explore in future research would be to use more explicit photos, as were used in Mahaffey, Bryan, and Hutchinson's (2005) study using startle eyeblink response. More overtly sexual photos could be more effective in eliciting the strong, emotional, disgust response that

would be immediately detectable in this implicit, physiological measure.

In addition, even if the images did portray the symbolic threat represented by homosexuals, it is possible that this symbolically-motivated attitude is not detectable using startle eye-blink response. In the study by Amodio et al. (2003) that we partially replicated, the target outgroup represented a "realistic" threat of fear. In the brain, fear is attached to the fight or flight response which activates the amygdala and is easily detected through startle eye-blink response (Lang et al., 1990). Gay prejudice, however, is perpetuated instead by a disgust reaction, which is housed in the insula (Gervais & Norenzayan, 2012). So, we are unsure whether startle response activates this portion of the brain and if our images were aversive enough to trigger a disgust reaction in the first place. As was noted in the introduction, use of this measure in relation to sexual prejudice is relatively new. As such, our understanding of exactly which emotions trigger the response and the extent to which these emotions heighten the EB reaction is quite limited.

Another methodological issue that may have interfered with the implicit measurement is the effect that novel stimuli can have on the startle response. It has been demonstrated in past research that novel or mildly aversive stimuli capture more attention (Dykman et al., 1959). Thus, it is possible that the higher startle to straight photos is due to the orienting effect, by which startle response is inhibited because more attention is devoted to the visual than the audio stimuli. Again, this could explain why our findings did not align with those of Amodio et al. (2003) or Mahaffey et al., (2005).

Aside from procedural explanations, it is also important to note that our sample was low in religious fundamentalism. Since high RF was expected to be a predictor of homosexual prejudice (and it was, in fact, a predictor of explicit antigay attitudes) the

limited number of fundamentalists in the study may have inhibited the effect seen in the startle amplitudes. Since this effect is quite subtle anyways, it may also have been affected by the small sample size in general. In the future a larger sample size and recruiting specifically for participants high in fundamentalism may help determine if startle eye blink could be a valid measure for implicit attitudes.

It is also possible that no significant difference was found because antigay attitudes occur more in conscious thought than in preconsciousness. Considering the findings regarding IMS/EMS and RF suggests that these attitudes are most affected by internal values and belief systems, it is important to note the difference between *internal* and *implicit.* Internal motivations to avoid prejudice, along with RF, both involve values that are personally essential to one's worldview. Implicit attitudes, on the other hand, often happen below conscious awareness and thus are not a part of someone's worldview or conscious value system. Fortunately, if antigay attitudes were to be primarily conscious as our research very tentatively suggests, this type of prejudice is more susceptible to intervention than deeply rooted, implicit biases that are more difficult both to detect and to change.

Limitations

There were many limitations to this project as it was designed as a pilot study to investigate startle amplitude as a possible physiological measure of automatic antigay prejudice. As such, both the primary student researcher and the faculty advisor had limited experience with the facial electromyography methodology and analysis. An indirect effect of this was a limited sample size due to the time it took to collect data. A more direct challenge that this created was in learning how to use SuperLab, the software

that was used for stimuli presentation. There was an issue with the settings on SuperLab for the first 15 or so participants where sometimes there was a flash before the startle probe which would begin to signal to the participants when a noise blast was coming. This was mentioned by one of the participants and immediately fixed, but it is unclear how long it may have been a problem. It appeared to be inconsistent for the most part, so it is unlikely that it had a large systematic effect, but with such a small sample size, it is possible that it interfered with the results of the startle eye blink response.

Within this small sample size, there was a major limitation in terms of diversity. The startle response was expected to be strongest amongst religious fundamentalists, which were scarce within the young, liberal sample from the University of Maine. As such, the effect of the startle may have been lost on the participants that were available because they were not prone to have a strong reaction to the gay photos in the first place.

A related reason why the startle may not have been effective is the nature of the photos that were used. In pursuit of ecological validity, the images were all romantic, but not sexual. However, these photos may not have been explicit enough to trigger the disgust reaction in the limbic system, which was discussed above in relation to the implicit measure. Past studies that have used startle eye blink have either used more explicit photos (Mahaffey et. al, 2005) or have been on racial prejudice, which is based on "realistic" threat or fear, not disgust (Amodio et. al, 2003). Given these issues, it is likely that, should the effect of startle eye-blink exist for antigay attitudes, our stimuli might not have been sufficient to evoke it and it was the combination of these limitations that led us to our current results.

Another potential problem with the stimuli was the difficulty in finding images that were well matched on attractiveness. Given the important findings of study one, that people find images of gay couples less attractive, it is hard to say that the images were appropriately matched. In general, the online search for photos of gay couples was more difficult than the search for straight couples. There were an abundance of engagement photos and other professional or high quality images for straight couples, while the gay photos tended to be less high quality and were largely from gay pride parades or protests. This was an interesting reflection of how gay relationships are characterized in the media, but also presented challenges for developing a sound method.

Future Directions

Although the startle eye-blink measure did not show particular promise in study two, the past research on this measure suggests that it is still worth pursuing (Amodio et al., 2003; Mahaffey et al., 2005). A few different approaches could be taken in terms of sample and stimuli in order to further investigate this implicit measurement. First, recruiting fundamentalists specifically from the subject pool could help detect stronger startle responses since fundamentalism was hypothesized to predict higher startle amplitude to gay photos. Another possibility for more effectively triggering the startle response is to use a later startle probe. If our results seem to indicate that antigay attitudes are relatively conscious constructs, then perhaps giving people more time to recognize the image as a gay couple would show larger differences in startle amplitude between photo types.

Second, the current literature suggests that priming masculinity heightens awareness of homosexual prejudice (Bosson & Vandello, 2011). So, another potential

change to the method could be to prime masculinity or heterosexuality to amplify the effect of the gay photos on startle response. Asserting heterosexuality has also had mixed results in effect on gay prejudice, so this could be another avenue to explore (Bosson et. al, 2012).

Despite the many avenues left to be explored within implicit measurements of homosexual prejudice, there is another potential explanation that is, in terms of real world applications, the most appealing of all. It is possible that implicit measurement is so difficult and consistent data is so elusive not only due to the complicated nature of the methods, but because we are searching for an effect that does not exist. This is likely an over simplification of what is truly happening, but perhaps this type of prejudice is largely found in people's conscious attitudes and is best measured through explicit evaluation. This is not to say that participants will always accurately report their own biases; social desirability can still play a large part in self-report even if people are aware of their prejudices. Regardless of how truthfully people are willing to report them, attitudes that are learned and found at a conscious level of thinking are much easier to address than those that are rooted deeply in the brain and exposed through automatic, emotional responses.

Significant progress has been made since the Stonewall Riots, and further strides have been made even since the legalization of gay marriage in the state of Maine. While social norms are turning towards greater tolerance for homosexuality, it is crucial that we bear in mind that personal values can have a greater impact than external pressures. In addition, we must consider that negative implicit attitudes can have an equally detrimental effect on minority populations as explicit prejudice, even if they are outside

our conscious awareness. In order to continue to strive toward equality, future generations must focus on internalizing values of acceptance and compassion rather than discrimination and prejudice.

References

Allport, G. W. (1958). *The nature of prejudice: Abridged.* Garden City, N.Y: Doubleday.

Allport, G. W., & Ross, J. M. (1967). Personal religious orientation and prejudice. *Journal of personality and social psychology*, *5*(4), 432–43. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/6051769

Altemeyer, B., & Hunsberger, B. (1992). Authoritarianism, religious fundamentalism, quest, and prejudice. *The International Journal for the Psychology of Religion*, 113–133.

Altemeyer, B., & Hunsberger, B. (2004). A revised religious fundamentalism scale: The short and sweet of it. *The International Journal for the Psychology of Religion*, 47–54.

Amodio, D. M., Harmon-Jones, E., & Devine, P. G. (2003). Individual differences in the activation and control of affective race bias as assessed by startle eyeblink response and self-report. *Journal of Personality and Social Psychology*, *84*(4), 738–753. doi:10.1037/0022-3514.84.4.738

Andreassi, John L. (2007) "Eye Movements and Behavior." *Psychophysiology Human Behavior and Physiological Response*. Mahwah, N.J: L. Erlbaum. N. pag. Print.

Aronson, E. (2007). *The Social Animal*. (10th ed.) Palgrave Macmillan.

Balaban, M. T., & Taussig, H. N. (1994). Salience of fear threat in the affective modulation of the human startle blink. *Biological Psychology, 38,* 117-131.

Batson, C. D., Flink, C. H., Schoenrade, P. A., Fultz, J., Pych, V., Downs, G., Zwahl, M. (1986). Religious orientation and overt versus covert racial prejudice, *50*(1), 175–181.

Baunach, D. M., Burgess, E. O., & Muse, C. S. (2009). Southern (dis)comfort: Sexual prejudice and contact with gay men and lesbians in the south. *Sociological Spectrum*, *30*(1), 30–64. doi:10.1080/02732170903340893

Beaman, W., Cannizzaro, L., Goldman, C., (2007). *The evolution of the medical definition of homosexuality*. Retrieved from: https://confluence.cornell.edu/display/WWC/The+Evolution+of+the+Medical+Definition+of+Homosexuality#

Bertrand, M., & Mullainathan, S. (2004) Are Emily and Greg more employable than Lakisha and Jamal? A field experiment on labor market discrimination. *American Economic Review*. *94*, 991–1013.

Blanton, H., Jaccard, J., Klick, J., Mellers, B., Mitchell, G., & Tetlock, P. E. (2009). Strong claims and weak evidence: reassessing the predictive validity of the IAT. *The Journal of Applied Psychology*, *94*(3), 567–82; discussion 583–603. doi:10.1037/a0014665

Bosson, J. K., & Vandello, J. a. (2011). Precarious manhood and its links to action and aggression. *Current Directions in Psychological Science*, *20*(2), 82–86. doi:10.1177/0963721411402669

Bosson, J. K., Weaver, J. R., Caswell, T. a., & Burnaford, R. M. (2012). Gender threats and men's antigay behaviors: The harmful effects of asserting heterosexuality. *Group Processes & Intergroup Relations*, *15*(4), 471–486. doi:10.1177/1368430211432893

Brambilla, M., & Butz, D. a. (2013). Intergroup threat and outgroup attitudes. *Social Psychology*, *44*(5), 311–319. doi:10.1027/1864-9335/a000127

Clyman, J. A., & Pachankis, J. E. (2014). The relationship between objectively coded explanatory style and mental health in the stigma-related narratives of young gay men, *15*(1), 110–115. doi:10.1037/a0031500

Conger, J.J. (1975) Proceedings of the American Psychological Association, Incorporated, for the year 1974: Minutes of the Annual meeting of the Council of Representatives. *American Psychologist, 30,* 620- 651.

Corrigan, P. W., Powell, K. J., & Rüsch, N. (2012). How does stigma affect work in people with serious mental illnesses? *Psychiatric Rehabilitation Journal*, *35*(5), 381–4. doi:10.1037/h0094497

Cottrell, C. A., & Neuberg, S. L. (2005). Different emotional reactions to different groups: a sociofunctional threat-based approach to "prejudice". *Journal of Personality and Social Psychology*, *88*(5), 770–89. doi:10.1037/0022-3514.88.5.770

Dasgupta, N., & Rivera, L. M. (2006). From automatic antigay prejudice to behavior: the moderating role of conscious beliefs about gender and behavioral control. *Journal of Personality and Social Psychology*, *91*(2), 268–80. doi:10.1037/0022-3514.91.2.268

Duckitt, J., Bizumic, B., Krauss, S. W., & Heled, E. (2010). A tripartite approach to right-wing authoritarianism: The authoritarianism-conservatism-traditionalism model. *Political Psychology*, *31*(5), 685–715. doi:10.1111/j.1467-9221.2010.00781.x

Duriez, B., Fontaine, J. J., & Hutsebaut, D. (2000). A further elaboration of the Post-Critical Belief Scale: Evidence for the existence of four different approaches to religion in Flanders-Belgium. *Psychologica Belgica*, *40*(3), 153-181.

Duriez, B. B., & Hutsebaut, D. D. (2000). The relation between religion and racism: The role of post-critical beliefs. *Mental Health, Religion & Culture*, *3*(1), 85-102. doi:10.1080/13674670050002135

Duriez, B., & Leuven, K. U. (2007). An introduction to the post-critical belief scale: Internal structure and external relationships. 767–793.

Dykman, R. A., & New York Academy of Sciences. (January 01, 1959). *Psychophysiological reactions to novel stimuli: Measurement, adaptation, and relationship of psychological and physiological variables in the normal human.* Annals of the New York Academy of Sciences, 79, 45-107.

Frost, D. M., Lehavot, K., & Meyer, I. H. (2013). Minority stress and physical health among sexual minority individuals. *Journal of Behavioral Medicine*. doi:10.1007/s10865-013-9523-8

Gervais, W. M., & Norenzayan, A. (2012). Reminders of secular authority reduce believers' distrust of atheists. *Psychological Science*, *23*(5), 483-491. doi:10.1177/0956797611429711

Gervais, W. M., Shariff, A. F., & Norenzayan, A. (2011). Do you believe in atheists? Distrust is central to anti-atheist prejudice. *Journal of Personality and Social Psychology*, *101*(6), 1189–206. doi:10.1037/a0025882

Goodman, J. A., Schell, J., Alexander, M. G., & Eidelman, S. (2008). The impact of a derogatory remark on prejudice toward a gay male leader. *1,* 542–555.

Gilmore, D. D. (1990). *Manhood in the making*. New Haven, CT: Yale University Press.

Greenwald, a G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: the implicit association test. *Journal of Personality and Social Psychology*, *74*(6), 1464–80. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/9654756

Harton, H. C., & Dirth, T. (2010). Putting prejudice and discrimination in plain sight. *Psyccritiques*, *55*(38), doi:10.1037/a0020993

Hebl, M., Barron, L. G., & King, E. B. (2011). Effects of manifest ethnic identification on employment discrimination. *Cultural Diversity & Ethnic Minority Psychology*, *17*(1), 23–30. doi:10.1037/a0021439

Herek, G.M. (1988). Heterosexuals' attitudes toward lesbians and gay men: Correlates and gender differences. *The Journal of Sex Research, 25* (4), 451-477.

Herek, G.M., Gillis, J.R., Cogan, J.C., & Glunt, E.K. (1997). Hate crime victimization among lesbian, gay, and bisexual adults: Prevalence, psychological correlates, and methodological issues. *Journal of Interpersonal Violence, 12*, 195-215.

Jewell, L. M., & Morrison, M. A. (2012). Making sense of homonegativity : Heterosexual men and women's understanding of their own prejudice and discrimination toward gay men. *Qualitative Research in Psychology* 37–41. doi:10.1080/14780887.2011.586098

Johnson, M. K., Rowatt, W. C., Barnard-Brak, L. M., Patock-Peckham, J. A., LaBouff, J. P., & Carlisle, R. D. (2011). A mediational analysis of the role of right-wing authoritarianism and religious fundamentalism in the religiosity–prejudice link. *Personality and Individual Differences*, *50*(6), 851–856. doi:10.1016/j.paid.2011.01.010

Johnson, M. K., Rowatt, W. C., & LaBouff, J. P. (2012). Religiosity and prejudice revisited: In-group favoritism, out-group derogation, or both? *Psychology of Religion and Spirituality*, *4*(2), 154–168. doi:10.1037/a0025107

Jonathan, E. (2008). The Influence of Religious Fundamentalism, Right-Wing Authoritarianism, and Christian Orthodoxy on Explicit and Implicit Measures of Attitudes Toward Homosexuals. *International Journal for the Psychology of Religion*, *18*(4), 316–329. doi:10.1080/10508610802229262

Kaiser, C. R., & Miller, C. T. (2001). Reacting to impending discrimination: Compensation for prejudice and attributions to discrimination. *Personality And Social Psychology Bulletin*, *27*(10), 1357-1367. doi:10.1177/01461672012710011

Lang, P. J., Bradley, M. M., & Cuthbert, B. N. (1990). Emotion, attention, and the startle reflex. *Psychological Review*, *97*(3), 377–95. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/2274614

Laythe, B., & Kirkpatrick, L. E. (2001). Predicting prejudice from religious fundamentalism and right-wing authoritarianism : A multiple-regression approach, 1–10.

Leak, G. K., & Finken, L. L. (2011). The relationship between the constructs of religiousness and prejudice: A structural equation model analysis. *International Journal for the Psychology of Religion*, *21*(1), 43–62. doi:10.1080/10508619.2011.532448

Mahaffey, A. L., Bryan, A., & Hutchison, K. E. (2005a). Sex differences in affective responses to homoerotic stimuli: evidence for an unconscious bias among

heterosexual men, but not heterosexual women. *Archives of Sexual Behavior*, *34*(5), 537–45. doi:10.1007/s10508-005-6279-4

Mahaffey, A. L., Bryan, A., & Hutchison, K. E. (2005b). Using Startle Eye Blink to Measure the Affective Component of Antigay Bias. *Basic and Applied Social Psychology*, *27*(1), 37–45. doi:10.1207/s15324834basp2701_4

Major, B., Kaiser, C. R., & McCoy, S. K. (2003). It's not my fault: When and why attributions to prejudice protect self-esteem. *Personality And Social Psychology Bulletin*, *29*(6), 772-781. doi:10.1177/0146167203029006009

Mavor, K. I., Macleod, C. J., Boal, M. J., & Louis, W. R. (2009). Right-wing authoritarianism, fundamentalism and prejudice revisited: Removing suppression and statistical artefact. *Personality and Individual Differences*, *46*(5-6), 592–597. doi:10.1016/j.paid.2008.12.016

Moradi, B., van den Berg, J. J., & Epting, F. R. (2009). Threat and guilt aspects of internalized antilesbian and gay prejudice: An application of personal construct theory. *Journal of Counseling Psychology*, *56*(1), 119–131. doi:10.1037/a0014571

Myers, D. G. (2010). *Social Psychology* (10th ed.) New York, NY: McGraw-Hill.

Neuner, I., Stöcker, T., Kellermann, T., Ermer, V., Wegener, H. P., Eickhoff, S. B., Shah, N. J. (2010). Electrophysiology meets fMRI: neural correlates of the startle reflex assessed by simultaneous EMG-fMRI data acquisition. *Human Brain Mapping*, *31*(11), 1675–85. doi:10.1002/hbm.20965

Norenzayan, A., Shariff, A. F., & Gervais, W. M. (2009). The evolution of religious misbelief. *Behavioral And Brain Sciences*, *32*(6), 531-532. doi:10.1017/S0140525X09991312

Norenzayan, A. (2013). *Big gods: How religion transformed cooperation and conflict.* Princeton: Princeton University Press.

Nosek, B. a., Smyth, F. L., Hansen, J. J., Devos, T., Lindner, N. M., Ranganath, K. a., Smith, C. T., Olson, K. R., Chugh, D., Greenwald, A., & Banaji, M. R. (2007). Pervasiveness and correlates of implicit attitudes and stereotypes. *European Review of Social Psychology*, *18*(1), 36–88. doi:10.1080/10463280701489053

Parrott, D. J., & Zeichner, A. (2005). Effects of sexual prejudice and anger on physical aggression toward gay and heterosexual men. *Psychology Of Men & Masculinity*, *6*(1), 3-17. doi:10.1037/1524-9220.6.1.3

Parrott, D. J. (2009). Aggression toward gay men as gender role enforcement: effects of male role norms, sexual prejudice, and masculine gender role stress. *Journal of Personality*, *77*(4), 1137–66. doi:10.1111/j.1467-6494.2009.00577.x

Peach, J. M., Yoshida, E., Spencer, S. J., Zanna, M. P., & Steele, J. R. (2011). Recognizing discrimination explicitly while denying it implicitly: Implicit social identity protection. *Journal of Experimental Social Psychology*, *47*(2), 283–292. doi:10.1016/j.jesp.2010.09.007

Petty, R. E., Fazio, R. H., & Briñol, P. (2009). *Attitudes: Insights from the new implicit measures.* New York: Psychology Press.

Persecution of homosexuals in the Third Reich. (2013). In *Holocaust encyclopedia*. Retrieved from: http://www.ushmm.org/wlc/en/article.php?ModuleId=10005261

Plant, E., & Devine, P. G. (1998). Internal and external motivation to respond without prejudice. *Journal Of Personality And Social Psychology*, *75*(3), 811-832. doi:10.1037/0022-3514.75.3.811

Prewitt-Freilino, J. L., & Bosson, J. K. (2008). Defending the self against identity misclassification. *Self and Identity*, *7*(2), 168–183. doi:10.1080/17405620701330706

Reiss, I. L., & Reiss, H. M. (1990). *An end to shame: Shaping our next sexual revolution.* Buffalo, N.Y: Prometheus Books.

Riek, B. M., Mania, E. W., & Gaertner, S. L. (2006). Intergroup threat and outgroup attitudes: a meta-analytic review. *Personality and Social Psychology Review : An Official Journal of the Society for Personality and Social Psychology, Inc*, *10*(4), 336–53. doi:10.1207/s15327957pspr1004_4

Rivera, L. M. (October, 2009). Not all self-affirmations alleviate prejudice: The effect of affirming masculinity on derogating gay men. Society of Experimental Social Psychology Meeting, Portland, ME.

Rowatt, W. C., Shen, M., LaBouff, J. P., & Gonzalez, A. (2013). Religious fundamentalism, right-wing authoritarianism, and prejudice: Insights from meta-analyses, implicit social cognition, and social neuroscience. In R. F. Paloutzian, C. L. Park (Eds.) , *Handbook of the psychology of religion and spirituality (2nd ed.)* (pp. 457-475). New York, NY US: Guilford Press.

Saguy, T., & Chernyak-Hai, L. (2012). Intergroup contact can undermine disadvantaged group members' attributions to discrimination. *Journal of Experimental Social Psychology*, *48*(3), 714–720. doi:10.1016/j.jesp.2012.01.003

Scagliotti, J., Rosenberg, R., & Schiller, G. (Producers). Schiller, G. (Director). (1985). *Before Stonewall: The making of a gay and lesbian community* [Motion picture]. United States: First Run Features.

Shen, M., Yelderman, L. A., Haggard, M. C., & Rowatt, W. C. (2013). Disentangling the belief in God and cognitive rigidity/flexibility components of religiosity to predict racial and value-violating prejudice: A Post-Critical Belief Scale analysis. *Personality And Individual Differences*, *54*(3), 389-395. doi:10.1016/j.paid.2012.10.008

Stefurak, T., Taylor, C., & Mehta, S. (2010). Gender-specific models of homosexual prejudice: Religiosity, authoritarianism, and gender roles. *Psychology of Religion and Spirituality*, *2*(4), 247–261. doi:10.1037/a0021538

Stephan, W. G., Boniecki, K. A., Ybarra, O., Bettencourt, A., Ervin, K. S., Jackson, L. A., & Renfro, C. (2002). The role of threats in the racial attitudes of Blacks and White. *Personality And Social Psychology Bulletin*, *28*(9), 1242-1254. doi:10.1177/01461672022812009

Talley, A., & Bettencourt, B. (2008). Evaluations and aggression directed at a gay male target : The role of threat and antigay prejudice. *Journal of Applied Social Psychology*, 647–683.

Tilcsik, A. (2011). Pride and prejudice: employment discrimination against openly gay men in the United States. *AJS; American Journal of Sociology*, *117*(2), 586–626. Retrieved from http://www.ncbi.nlm.nih.gov/pubmed/22268247

Vandello, J. a., & Bosson, J. K. (2013). Hard won and easily lost: A review and synthesis of theory and research on precarious manhood. *Psychology of Men & Masculinity*, *14*(2), 101–113. doi:10.1037/a0029826

Vanman, E. J., Saltz, J. L., Nathan, L. R., & Warren, J. A. (2004). Racial discrimination by low-prejudiced whites, *15*(11), 711–715.

Vescio, T., & Biernat, M. (2003). Family values and antipathy toward gay men, 833–847.

Vincent, W., Parrott, D. J., & Peterson, J. L. (2011). Combined effects of masculine gender-role stress and sexual prejudice on anger and aggression toward gay men. *Journal of Applied Social Psychology*, *41*(5), 1237–1257. doi:10.1111/j.1559-1816.2011.00755.x

Vrana, S. R., Spence, E. L., & Lang, P. J. (1988). The startle probe response : A new measure of emotion?, *97*(4), 487–491.

Weinberg, G. H. (1972). *Society and the healthy homosexual.* New York: St. Martin's Press

Whitley, B. E. (2009). Religiosity and attitudes toward lesbians and gay men: A meta-analysis. *International Journal for the Psychology of Religion*, *19*(1), 21–38. doi:10.1080/10508610802471104

Willer, R. (August, 2005). *Overdoing gender: A test of the masculine overcompensation thesis*. American Sociological Association Meeting, Philadelphia, PA.

Witvliet, C., & Vrana, S. R. (1995). Psychophysiological responses as indices of affective dimensions. *Psychophysiology*, *32*(5), 436-443. doi:10.1111/j.1469-8986.1995.tb02094.x

Woodworth, R. S., & Schlosberg, H. (1954). *Experimental psychology (Rev. ed.)*. Oxford England: Holt.

Wulff, D. M. (1991). *Psychology of religion: Classic and contemporary views*. Oxford England: John Wiley & Sons

Yoshida, E., Peach, J. M., Zanna, M. P., & Spencer, S. J. (2012). Not all automatic associations are created equal: How implicit normative evaluations are distinct from implicit attitudes and uniquely predict meaningful behavior. *Journal of Experimental Social Psychology*, *48*(3), 694–706. doi:10.1016/j.jesp.2011.09.013

Zeichner, A., & Reidy, D. E. (2009). Are homophobic men attracted to or repulsed by homosexual men? Effects of gay male erotica on anger, fear, happiness, and disgust. *Psychology of Men & Masculinity*, *10*(3), 231–236. doi:10.1037/a0014955

Appendix A — Stimuli

Gay 1

Gay 2

Gay 3

Gay 4

Gay 5

Gay 6

Gay 7

Gay 8

Gay 9

Gay 10

Gay 11

Gay 12

Gay 13

Straight 1

Straight 2

Straight 3

Straight 4

Straight 5

Straight 6

Straight 7

Straight 8

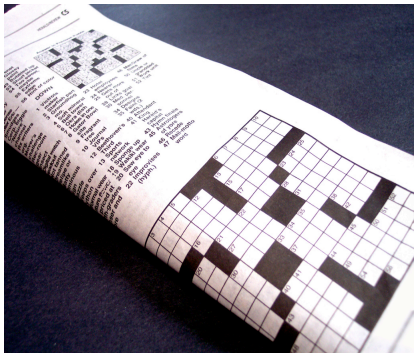
Straight 9

Straight 10

Straight 11

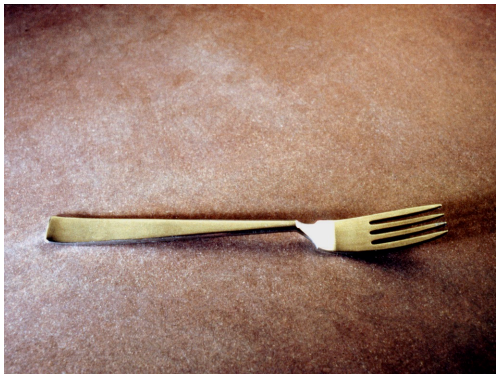
Straight 12

Neutral 1

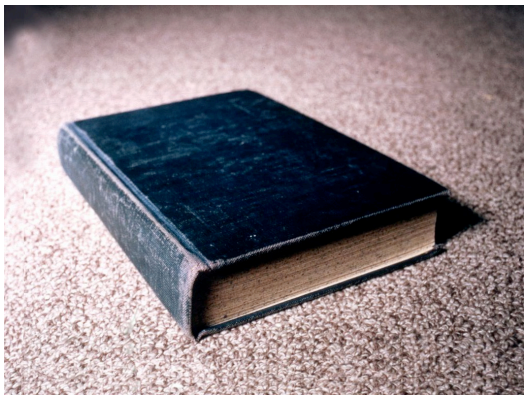


Neutral 2

Neutral 3



Neutral 4

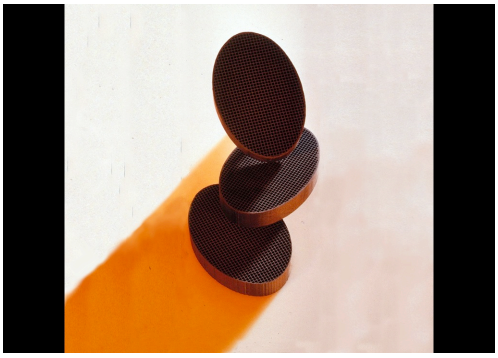


Neutral 5

Neutral 6

Neutral 7

Neutral 8



Neutral 9

Neutral 10

Neutral 11

Neutral 12

Appendix B – Measures

Measures Used in Study 1

Questions that Accompanied Each Image in Study 1

How attractive is this couple? (1 being unattractive and 5 being very attractive)

1 2 3 4 5

How recognizable are the genders of the couple? (1 being unclear and 5 being immediately recognizable)

1 2 3 4 5

How attractive is this photo? (1 being unattractive and 5 being very attractive)

1 2 3 4 5

How romantic is this image? (1 being not romantic at all and 5 being very romantic)

1 2 3 4 5

How sexual is this image? (1 being not sexual at all and 5 being very sexual)

1 2 3 4 5

Thermometer items

Please rate how warm or cold you feel toward the following groups (0 – coldest feelings, 50 – neutral feelings, 100 – warmest feelings)

a. Gay men

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

Religiousness

I am interested in religion

1	2	3	4	5	6	7	8	9
Very Strongly Disagree	Strongly Disagree	Moderately Disagree	Slightly Disagree	Precisely Neutral	Slightly Agree	Moderately Agree	Strongly Agree	Very Strongly Agree

My religion is important to me

1	2	3	4	5	6	7	8	9
Very Strongly Disagree	Strongly Disagree	Moderately Disagree	Slightly Disagree	Precisely Neutral	Slightly Agree	Moderately Agree	Strongly Agree	Very Strongly Agree

I am a *RELIGIOUS* person

1	2	3	4	5	6	7	8	9
Very Strongly Disagree	Strongly Disagree	Moderately Disagree	Slightly Disagree	Precisely Neutral	Slightly Agree	Moderately Agree	Strongly Agree	Very Strongly Agree

I am a *SPIRITUAL* person

1	2	3	4	5	6	7	8	9
Very Strongly Disagree	Strongly Disagree	Moderately Disagree	Slightly Disagree	Precisely Neutral	Slightly Agree	Moderately Agree	Strongly Agree	Very Strongly Agree

RWA

This survey is part of an investigation of general public opinion concerning a variety of social issues. You will probably find that you agree with some of the statements, and disagree with others, to varying extents. Please indicate your reaction to each statement according to the following scale:

Using the scale below, please indicate the degree to which you agree or disagree with the following statements:

1	2	3	4	5	6	7	8	9
Very Strongly Disagree	Strongly Disagree	Moderately Disagree	Slightly Disagree	Precisely Neutral	Slightly Agree	Moderately Agree	Strongly Agree	Very Strongly Agree

Important: You may find that you sometimes have different reactions to different parts of a statement. For example, you might very strongly disagree ("1") with one idea in a statement, but slightly agree ("6") with another idea in the same item. When this happens, please combine your reactions, and write down how you feel on balance (a "2" in this case).

___ a. What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path.
___ b. There are many radical, immoral people in our country today, who are trying to ruin it for their godless purposes, whom the authorities should put out of action.
___ c. Once the government leaders give us the "go-ahead," it will be the duty of every patriotic citizen to help stomp out the rot that is poisoning our country from within.
___ d. It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubt in people's minds.
___ e. It's better to have trashy magazines and radical pamphlets in our communities than to let the government have the power to censor them.
___ f. What our country needs most is discipline, with everyone following our leader in unity.
___ g. Gays and lesbians are just as healthy and moral as anybody else.
___ h. Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else.
___ i. People should pay less attention to the Bible and other old traditional forms of religious guidance, and instead develop their own personal standards of what is moral and immoral.
___ j. There is nothing wrong with premarital sexual intercourse.

RF

Using the same scale above, please indicate the degree to which you agree or disagree with the following statements:

___ a. God has given humanity a complete, unfailing guide to happiness and salvation, which must be totally followed.

___ b. No single book of religious teachings contains all the intrinsic, fundamental truths about life.

___ c. The basic cause of evil in this world is Satan, who is constantly and ferociously fighting against God.

___ d. It is more important to be a good person than to believe in God and the right religion.

___ e. There is a particular set of religious teachings in this world that are so true, you can't go any "deeper" because they are the basic, bedrock message that God has given humanity.

___ f. When you get right down to it, there are basically only two kinds of people in the world: the Righteous, who will be rewarded by God; and the rest, who will not.

___ g. Scriptures may contain general truths, but they should NOT be considered completely, literally true from beginning to end

___ h. To lead the best, most meaningful life, one must belong to the one, true religion.

___ i. "Satan" is just the name people give to their own bad impulses. There really is *no such thing* as a diabolical "Prince of Darkness" who tempts us.

___ j. Whenever science and sacred scripture conflict, *science* is probably right.

___ k. The fundamendals of God's religion should never be tampered with, or compromised with others' beliefs.

___ k. *All* of the religions in the world have flaws and wrong teachings. There is *no* perfectly true, right religion.

Additional Measures Used in Study 2

PCBS

___ . The Bible holds a deeper truth which can only be revealed by personal reflection
___ . God has been defined for once and for all and therefore is immutable
___ . Faith turns out to be an illusion when one is confronted with the harshness of life
___ . The Bible is a rough guide in the search for God, and not a historical account
___ . Even though this goes against modern rationality, Mary truly remained a virgin
___ . Each statement about God is a result of the time in which it was made
___ . Even though the Bible was written a long time ago, it retains a basic message
___ . Only the major religious traditions guarantee admittance to God
___ . The manner in which humans experience God will always be colored by society
___ . Ultimately, there is only one correct answer to each religious question
___ . The world of Bible stories is so far removed from us, that it has little relevance
___ . Science has made a religious understanding of life superfluous
___ . God grows together with the history of humanity and therefore is changeable
___ . My ideology is only one possibility among so many others
___ . I think that Bible stories should be taken literally, as they are written
___ . Despite the injustices caused by Christianity, Christ's message remains valuable
___ . In the end, faith is nothing more than a safety net for human fears
___ . Faith is an expression of a weak personality.

IMS/EMS

___ . Because of today's PC (politically correct) standards I try to appear nonprejudiced toward gay people
___ . I try to hide any negative thoughts about gay people in order to avoid negative reactions from others
___ . If I acted prejudiced toward gay people, I would be concerned that others would be angry with me
___ . I attempt to appear nonprejudiced toward gay people in order to avoid disapproval from others
___ . I try to act nonprejudiced toward gay people because of pressure from others.

___ . I attempt to act in nonprejudiced ways toward gay people because it is personally important to me
___ . According to my personal values, using stereotypes about gay people is OK
___ . I am personally motivated by my beliefs to be nonprejudiced towards gay people
___ . Because of my personal values, I believe that using stereotypes about gay people is wrong
___ . Being nonprejudiced toward gay people is important to my self concept

Thermometer items

Please rate how warm or cold you feel toward the following groups (0 – coldest feelings, 50 – neutral feelings, 100 – warmest feelings)

a. Gay men

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

b. Lesbian women

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

c. Straight men

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

d. Straight Women

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

e. Atheists (those who do not believe in God)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

f. Agnostics (Those who are uncertain that God exists)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

g. Christians

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

h. White non-Hispanics (Caucasians)

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

i. Black / African Americans

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

j. Muslims

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

k. Arabs

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

l. Jews

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Very Cold Very Warm

To what extent to you feel the following emotions towards *gay men and lesbians*

n. Angry

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Not at all Angry Extremely
Angry

o. Disgusted

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Not at all Disgusted Extremely
Disgusted

p. Distrusting

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%
Not at all Distrusting Extremely
Distrusting

Explicit Antigay Bias

a) Lesbians just can't fit into our society.
1 2 3 4 5 6 7

b) State laws regulating private, consenting lesbian behavior should be loosened.
1 2 3 4 5 6 7

c) Female homosexuality is a sin.
1 2 3 4 5 6 7

d) Female homosexuality in itself is no problem, but what society makes of it can be a problem.
1 2 3 4 5 6 7

e) Lesbians are sick.
1 2 3 4 5 6 7

f) I think male homosexuals are disgusting.
1 2 3 4 5 6 7

g) Male homosexuality is a perversion.
1 2 3 4 5 6 7

h) Just as in other species, male homosexuality is a natural expression of sexuality in human men.

1 2 3 4 5 6 7

i) Homosexual behavior between two men is just plain wrong.

1 2 3 4 5 6 7

j) Male homosexuality is merely a different kind of lifestyle that should *not* be condemned.

1 2 3 4 5 6 7

Social Distance

According to my first feeling reactions, I would willingly admit a member of the groups listed below to each of the classifications under which I have marked an "X"

Group	As a relative by marriage	In my club as a personal friend	On my street as my neighbor	Working alongside me in a job	As citizens in my country	As visitors to my country	Excluded from my country
Gay men							
Lesbians							

Intergroup Contact

Do you have any male or female friends, relatives, or close acquaintances who are gay or homosexual? [Yes/No]

If yes – How many?

Think of the gay person you feel closest to

1. What is this person's gender?
2. How is this person related to you?
    a. Immediate family
    b. Other family
    c. Close friend
    d. Other friend
    e. Close acquaintance
3. How did you learn about this person's sexual orientation?
    a. Told by the person
    b. Told by someone else
    c. Guessed that the person was gay
4. Has this person told you directly that they are gay? [Yes/No]

Politics

Do you want to allow the State of Maine to issue marriage licenses to same-sex couples?

Circle one: YES NO

How in favor are you of allowing the State of Maine to issue marriage licenses to same-sex couples?

1	2	3	4	5	6	7
Not at all						Very much

How do you feel about the morality of the following?

a. Abortion, if the pregnancy is the result of rape?

1	2	3	4
Always wrong	Almost always wrong	Sometimes wrong	Not wrong at all

b. Abortion, if the family cannot afford the child?

1	2	3	4
Always wrong	Almost always wrong	Sometimes wrong	Not wrong at all

c. The use of marijuana?

1	2	3	4
Always wrong	Almost always wrong	Sometimes wrong	Not wrong at all

d. Physician assisted suicide?

1	2	3	4
Always wrong	Almost always wrong	Sometimes wrong	Not wrong at all

e. Embryonic stem cell research?

1	2	3	4
Always wrong	Almost always wrong	Sometimes wrong	Not wrong at all

f. War?

1	2	3	4
Always wrong	Almost always wrong	Sometimes wrong	Not wrong at all

For the following items, use the following response scale:
1 = Very strongly <u>disagree</u>
2 = Strongly disagree
3 = Disagree somewhat
4 = Neither agree nor disagree
5 = Agree somewhat
6 = Strongly agree
7= Very strongly <u>agree</u>

The federal government should….

a. Abolish the death penalty
1 2 3 4 5 6 7

b. Create the strict separation of church and state
1 2 3 4 5 6 7

c. Punish criminals more harshly
1 2 3 4 5 6 7

d. Enact stricter gun laws
1 2 3 4 5 6 7

e. Improve standard of living for ethnic minorities
1 2 3 4 5 6 7

f. Allow prayer in public schools
1 2 3 4 5 6 7

g. Protect the environment
1 2 3 4 5 6 7

h. Be patrolling and controlling our borders
1 2 3 4 5 6 7

i. Fight terrorism
1 2 3 4 5 6 7

j. Take action to stop the disastrous effects of global climate change
1 2 3 4 5 6 7

The following items ask for your opinions about the recent Universal Health Care bill.

Please indicate the extent to which you agree with each of the following statements:

a. I support the recently passed health care bill.

1 2 3 4 5 6 7
Not at all Very much

b. Our government needs health reform because the underprivileged are not getting their basic needs met

1 2 3 4 5 6 7
Not at all Very much

c. Universal health care is just designed to make the hard-working people of America pay for the health care of the lazy people of America

1 2 3 4 5 6 7
Not at all Very much

d. Access to medical care and insurance is a basic, inherent right of man.

1 2 3 4 5 6 7
Not at all Very much

8. How would you describe yourself politically (circle one)

1 = Very strongly conservative
2 = Strongly conservative
3 = Moderately conservative
4 = Neither conservative nor liberal
5 = Moderately liberal
6 = Strongly liberal
7 = Very strongly liberal

Demographics

Please provide your age (in years). _____

Please provide your gender _____

With which racial/ethnic group do you most closely identify?

African American / Black

Asian / Pacific Islander

Hispanic

Native American

White

Other (please specify) _____

Please provide your relationship status

Single

Dating

Engaged

Married

Divorced

In what socio-economic bracket were you raised for most of your life

Upper class

Upper-middle class

Middle class

Lower-middle class

Lower class

Do you believe in God?

Yes

No

Uncertain

What is your primary religious affiliation?

Protestant (Denomination: _____)

Catholic

Buddhist

Hindu

Jewish

Muslim

Other _____

None

What is your sexual orientation?

____ Heterosexual

____ Homosexual

____ Bisexual

____ Other _____

Appendix C – Informed Consent
Online

You are invited to participate in a research project being conducted by Drs. Jordan LaBouff and Shannon McCoy in Department of Psychology at the University of Maine. The purpose of this study is to investigate the relationship between our conscious attitudes and our automatic reflexes. You must be 18 or older to participate

What Will You Be Asked To Do?

If you decide to participate, you will be asked to complete an online pre-test (roughly 30-minutes) about your attitudes and beliefs including information about your religious beliefs, politics (e.g., supporting specific policies) and groups (e.g., attitudes towards lesbians and gay men, racial, ethnic, and social groups). Within one to two weeks after the survey you will be asked to attend an experimental session (60-minute) individually on the UMaine campus. In this session you will view pictures of environmental scenes and people in social scenes. While viewing these images you will randomly hear a loud burst of noise designed to trigger your startle reflex. We will measure your reflex using two small sensors that are placed on the skin just under your left eye.

Risks

- It is possible that some questions may make you uncomfortable or that you may feel negative emotions. You may skip any questions that you do not feel comfortable answering, and you may end your participation at any time.
- There is the possibility that you may feel uncomfortable when the experimenter attaches or removes sensors.
- The loud noise used to trigger the startle reflex may be uncomfortable for some participants

Benefits

While there are no direct benefits to you from participating in this study, your participation will help enhance our understanding of the ways in which our reflexes are associated with our attitudes.

Compensation

You will receive up to two research credits as compensation for participation. One credit will be awarded for the online pre-screening. A second credit will be awarded for the experimental session.

Voluntary

Participation is voluntary. You may terminate participation at any time. Those who terminate participation before the in-person research session will not be eligible for the second credit. Those who terminate participation at the in-person research session will still be eligible for all credit.

Confidentiality

Potentially identifying information will be used only to link responses between the online pre-test and experimental data. Identifying data will be stored separately from your survey answers on a password protected drive in a locked office or lab space using encryption software that provides additional security. After data are collected, identifying information will be destroyed and digital anonymized data will be kept indefinitely on a password-protected drive in a locked laboratory or office.

Contact Information

If you have any questions about the study, please feel free to contact Jordan LaBouff (Jordan.LaBouff@umit.maine.edu). Additionally, if you have any questions about your rights as a research participant, please contact Gayle Jones, Assistant to the University of Maine's Protection of Human Subjects Review Board, at 207-581-1498 (or e-mail gayle.jones@umit.maine.edu).

"By clicking this link I give my consent to participate in this study. Let's get started"

"I DO NOT consent to this study and would like to leave this website."

Experimental Session

You are invited to participate in a research project being conducted by Drs. Jordan LaBouff and Shannon McCoy in Department of Psychology at the University of Maine. The purpose of this study is to investigate the relationship between our conscious attitudes and our automatic reflexes.

You must be 18 or older to participate

What Will You Be Asked To Do?
If you decide to participate in this approximately 60-minute session, you will be asked to view pictures of environmental scenes and people in social scenes. While viewing these images you will randomly hear a loud burst of noise designed to trigger your startle reflex. We will measure your reflex using two small sensors that are placed on the skin just under your left eye.

Risks

- There is the possibility that you may feel uncomfortable when the experimenter attaches or removes sensors.
- The loud noise used to trigger the startle reflex may be uncomfortable for some participants

Benefits
While there are no direct benefits to you from participating in this study, your participation will help enhance our understanding of the ways in which our reflexes are associated with our attitudes.

Compensation
You will receive one research credit for participating in this portion of the study.

Voluntary
Participation is voluntary. You may terminate participation at any time without loss of credit.

Confidentiality
Potentially identifying information will be used only to link responses between the online pre-test and experimental data. Identifying data will be stored separately from your survey answers on a password protected drive in a locked office or lab space using encryption software that provides additional security. After data are collected, identifying information will be destroyed and digital anonymized data will be kept indefinitely on a password-protected drive in a locked laboratory or office.

Contact Information
If you have any questions about the study, please feel free to contact Jordan LaBouff (Jordan.LaBouff@umit.maine.edu). Additionally, if you have any questions about your rights as a research participant, please contact Gayle Jones, Assistant to the University of Maine's Protection of Human Subjects Review Board, at 207-581-1498 (or e-mail gayle.jones@umit.maine.edu).

Your signature below indicates that you have read and understand the above information. You will receive a copy of this form.

Signature _____ **Date** _____

Appendix D – Experimenter Script

Pre-Participant Set-Up: Monitoring Room

1) Turn on McCoy Physio 2 and Mac Mini 2
2) Open Startle Template 2
    -Make sure the Start button has a green dot next to it—if it doesn't, restart Acqknowledge
3) Set up remote desktop and iChat with computer in physio room
    -Open remote desktop (binocular icon on dock)
    -Select the only computer on the list
    -Hit "control" in the upper left hand corner
    -Open iChat on both computers
    -Call yourself
    -***MUTE YOUR END OF THE CONVERSATION***
4) Set up acquisition for 5 minute baseline
    -Got to MP150 drop down list from top of the screen
    -Hit "Set up Acquisition"
    -Enter 5 minutes
    -Select "Save Once"
    -Exit the window

Pre-Participant Set-Up: Experiment Room

** See checklist on cover sheet*

1) Computer & Machines:
    - Turn on computer
    - Get experiment up and ready to run (Gay Prejudice EMG, SuperLab file on far right of desktop)—start the experiment but don't hit the spacebar, turn the monitor off to darken the screen during hook-up
    - Biopac and blood pressure machines
2) Supplies:
    - Load gel in syringe
    - Get collars and heart rate sensors ready for hook-up
    - Get a cup of water, Q-Tips and cotton balls
3) Paperwork on clipboard:
    - Participant cover sheet
    - Informed consent
    - Skin conditions questionnaire
4) Put a lab coat on

Participant Prep

1) Greet participant and bring into side room for informed consent
2) Go over informed consent. Things to highlight:
    What you will be asked to do
    - You will be asked to view images of people and objects
    - There will be two small sensors under your eye and one on your forehead

- Sensors on arm and back of each calf, blood pressure cuff

Risks

- There will be loud bursts of noise designed to trigger your startle reflex
- Attaching and removing sensors may cause discomfort

Compensation

- You'll receive one research credit (per hour)

Voluntary

- All participation is voluntary—if at any point you want to stop or skip part of the experiment, just let me know.

Confidentiality

- All potentially identifying information is kept separately from other data and used only to link results to responses from the online pre-test. Everything will be coded and nothing will be associated with your name.

3) Give them the skin conditions sheet
4) Leave them to sign informed consent and fill out skin conditions sheet—ask them to prop the door open when they are all set
5) Go back in when they prop the door, make sure informed consent is signed and all answers are "no" on skin conditions sheet
6) Bring them to the experiment room, ask participant to leave all belongings, including phone in the other room to avoid distractions

Hook-up

**Always explain what you're doing before you do it*

1) Scrub under the right eye and the middle of the forehead with Lemon Prep until red.
2) Wipe away ALL residue from Lemon Prep with damp cotton ball.
3) Fill electrodes with gel using syringe AFTER attaching collars to the sensors

**Reassure participant that the syringe is for the gel only and will actually go nowhere near them*

4) Attach electrodes under right eye and in the middle of the forehead
5) Attach heart rate sensors, one on the right forearm and one on the back of each calf
6) Attach blood pressure cuff

**Explain that arm must be kept still for the duration of the experiment.*

7) Give participant headphones to put on—make sure the wires aren't pulled too tight by the headphones
8) Leave to check readings in the next room

Tell participant you will be back to start the study in* ***about five minutes* *after you check to make sure everything is reading correctly in the next room*

9) When you return to the monitoring room, start 5 minute baseline.
10) Set up acquisition for 7 minutes.

-MP150
-Set up Acquisition
-Enter 7 minutes
-Select "Append" –NOT Save Once
-Exit window

11) Once 5 minute baseline is done and 7 minute acquisition has been set up, return to participant.

Experiment

1) Explain that you're ready to start the study and that you'll need to read off a script from now on so that everyone gets the same instructions:

"On the next few slides, there will be some sample images of people and objects for you to view without any sounds. When they are done, a slide will come up instructing you to say 'I'm done' out loud, at which point I will return and we will continue with the study. Do you have any questions?"

**Hit spacebar to start SuperLab*

2) Wait for the participant to say he/she is done. Knock and reenter the room.

"Now I'm going to show you what the noise that you will hear during the next portion of the study will sound like. Please put on the headphones, you can leave these on for the rest of the study."

**Make sure they know the noise blast is coming before you play it. Hit the spacebar to play the sound.*

3) Make sure they heard the sound, and continue on:

"On the next few slides, there will be some sample images and sounds to get you introduced to the format. Then there will be a brief pause after which the rest of the study will continue automatically. Please keep your attention on the screen for the duration of the study. At the end of the study, a message will appear to let you know that you are done, at that time please say 'I'm done' out loud and I will come back in to unhook you. Do you have any questions?"

**Make sure they do not have any questions before you hit the spacebar, once the spacebar is hit the study will continue automatically after 25 seconds and you need to get back to the monitor computer to begin data collection on Acknowledge.*

4) Start the experiment by hitting the spacebar, and leave the room.

5) Hit "Start" on Acknowledge in next room. Wait until they say "I'm done," then return to participant to unhook.

Unhooking

1) Take blood pressure cuff off
2) Unclip heart rate sensors and let participant peel the sensors off if they want
3) Take electrodes off yourself since the participant can't see them and the electrodes are delicate

**Hold down skin around the eye while you peel the collar off to minimize discomfort*

Debriefing Script—Read as written

This study is designed to examine whether automatic, non-conscious emotional responses to pictures of different types of people are detectable in something as basic as the human startle reflex. We showed you pictures of same-sex and opposite-sex couples and measured your startle reflex for each. We will examine these data and compare them with your pre-screen items in an attempt to understand the relationships between our conscious attitudes and our unconscious reflexes.

If the nature of the stimuli or the startles you experienced produced any discomfort, negative emotions, or generated questions or comments, please feel free to contact the researchers (Jordan LaBouff, Ph.D. at Jordan.LaBouff@umit.maine.edu or Shannon McCoy, Ph.D. at Shannon.McCoy@umit.maine.edu). We will be happy to more fully discuss the nature of the research, respond to any questions or concerns, and help direct you to resources that are available to help debrief your experience with a professional.

Thank you again for your time and participation.

Table 1: Study 1 Zero-order Correlations

Variable	1	2	3	4	5	6	7	8	9	10	11	12	*M*	*SD*	α
1. Gay Thermometer	--												6.79	3.10	
2. Religiosity	-0.36**	--											3.51	2.96	
3. RF	-0.46**	0.82**	--										3.31	2.16	0.96
4. RWA	-0.45**	0.49**	0.66**	--									3.52	1.95	0.81
5. Gay Couple	0.70**	-0.35**	-0.45**	-0.43**	--								2.57	1.03	
6. Gay Photo	0.70**	-0.35**	-0.44**	-0.44**	0.90**	--							2.47	1.03	
7. Gay Romantic	0.62**	-0.33**	-0.42**	-0.42**	0.77**	0.83**	--						2.64	1.08	
8. Gay Sexual	0.16*	-0.00	-0.03	-0.03	0.25**	0.24**	0.33**	--					2.72	0.93	
9. Straight Photo	0.25**	0.01	0.06	0.10	0.33**	0.39**	0.38**	0.22**	--				3.55	0.72	
10. Straight Couple	0.19**	0.04	0.08	0.10	0.32**	0.30**	0.31**	0.20**	0.86**	--			3.65	0.69	
11. Straight Romantic	0.26**	-0.05	-0.02	0.04	0.33**	0.35**	0.51**	0.29**	0.80**	0.70**	--		3.77	0.73	
12. Straight Sexual	0.03	0.13	0.14**	0.11	0.11	0.14*	0.21**	0.65**	0.31**	0.27**	0.31**	--	2.58	0.86	

Table 2: RF and RWA mediate the relationship between religion and ratings of gay photos: Study one

	β	t	p	R^2	Sig. F change
Step One				.122	--
Religiousness	-.350	-5.28	.000**		
Step Two				.231	.000**
Religiousness	.020	.18	.855		
RWA	-.215	-2.56	.011*		
RF	-.325	-2.56	.011*		

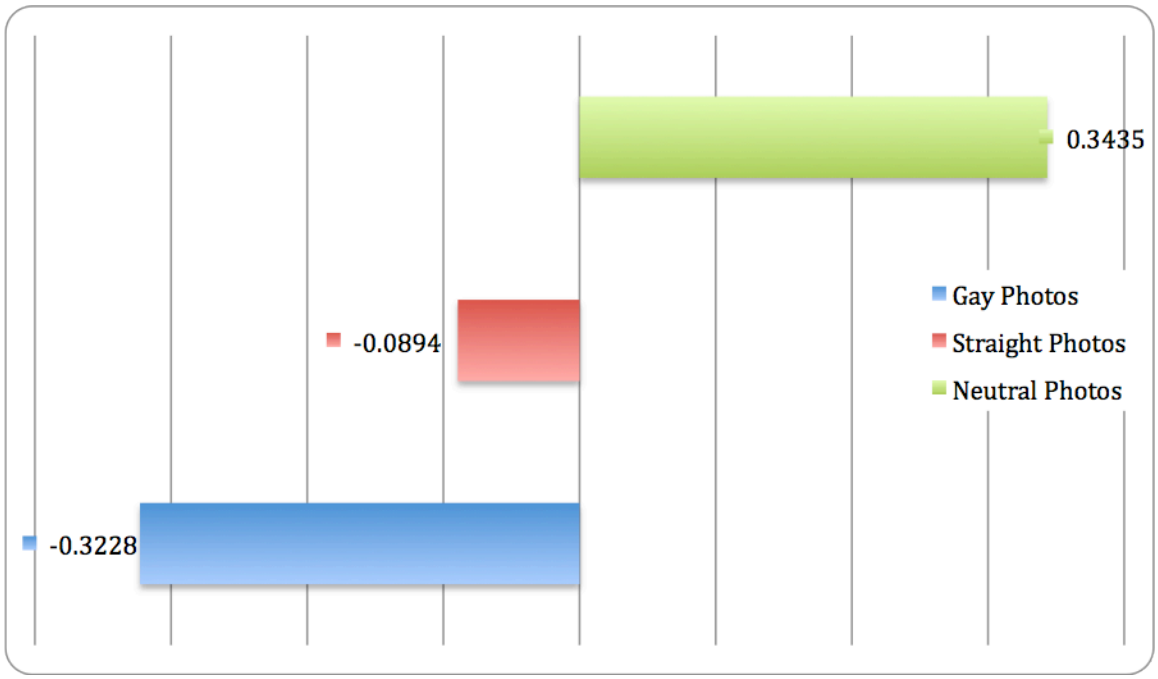
Table 3: Zero-order correlations: Study two

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	*M*	*SD*	a
1. IAT Effect	--															1.27	5.46	--
2. RWA	-0.12	--														4.42	1.52	.82
3. RF	0.22	0.61**	--													4.01	1.90	.96
4. Religious	0.14	0.47*	0.80**	--												4.14	2.92	--
5. Orthodox	0.03	0.80**	0.86**	0.73**	--											4.18	1.81	.85
6. Second Naiveté	0.01	0.60**	0.70**	0.70**	0.81**	--										5.21	1.24	.30
7. External Critique	0.03	-0.60**	-0.70**	-0.71**	-0.79**	-0.85**	--									4.19	1.98	.89
8. Relative	-0.38	-0.11	-0.47*	-0.25	-0.31	-0.22	0.12	--								5.44	1.31	.71
9. Symbolic	-0.23	0.15	0.03	0.27	0.15	0.50**	-0.62**	0.58**	--							2.28	2.35	--
10. Inclusion	0.11	0.68**	0.85**	0.76**	0.93**	0.90**	-0.89**	-0.46*	0.23	--						-0.24	5.17	--
11. Relative Startle Amplitude	-0.23	-0.08	0.11	0.03	0.01	-0.01	-0.15	0.07	0.16	0.04	--					-0.23	0.55	--
12. EAG Female	0.21	0.52**	0.73**	0.60**	0.67**	0.60**	-0.61**	-0.38*	0.10	0.71**	0.09	--				2.92	1.50	.91
13. EAG Male	0.25	0.53**	0.73**	0.64**	0.64**	0.58**	-0.63**	-0.29	0.18	0.68**	0.15	0.91**	--			3.34	1.75	.90
14. IMS	-0.51*	-0.01	-0.17	0.04	-0.06	-0.17	0.06	0.04	-0.08	-0.10	0.06	-0.45*	-0.53**	--		6.19	1.73	.91
15. EMS	0.20	0.41*	0.51**	0.51**	0.49**	0.24	-0.32	-0.45*	-0.23	0.46*	-0.07	0.32	0.29	0.18	--	4.89	1.52	.79

Table 4: RF mediates the relationship between religion and explicit gay prejudice: Study two

	β	*t*	*p*	R^2	Sig. *F* change
Step One				.403	--
Religiousness	.635	4.19	.000**		
Step Two				.551	.000**
Religiousness	.146	.64	.529		
RWA	.135	.79	.439		
RF	.531	2.09	.047*		

Figure 1: T-Test Startle Magnitude by Photo Type



Author's Biography

Morgan was born in Brunswick, ME on August 12, 1992 and grew up in Bowdoin, ME. She graduated as the Salutatorian of her class from Mt. Ararat High School in 2010. Morgan graduates from the University of Maine with a degree in psychology and minors in sociology and English. She is a member of Phi Beta Kappa, Sophomore Eagles, All Maine Women, and her Class Council. Morgan has received the Outstanding Senior, Glanville Scholar, and Richard M. Ryckman awards from the Psychology department, in addition to the Servant Heart and University of Maine Student Government Leader Scholarships. She has also received funding to travel to multiple conferences involving both her research in psychology and interest in civic engagement. Morgan was also an active member and leader in UMaine's chapter of Alternative Breaks throughout her undergraduate career.

Morgan plans to attend Graduate School at the University of Maine pursuing a master's degree in Higher Education. She will work as a Graduate Assistant for Alternative Breaks while continuing her education.